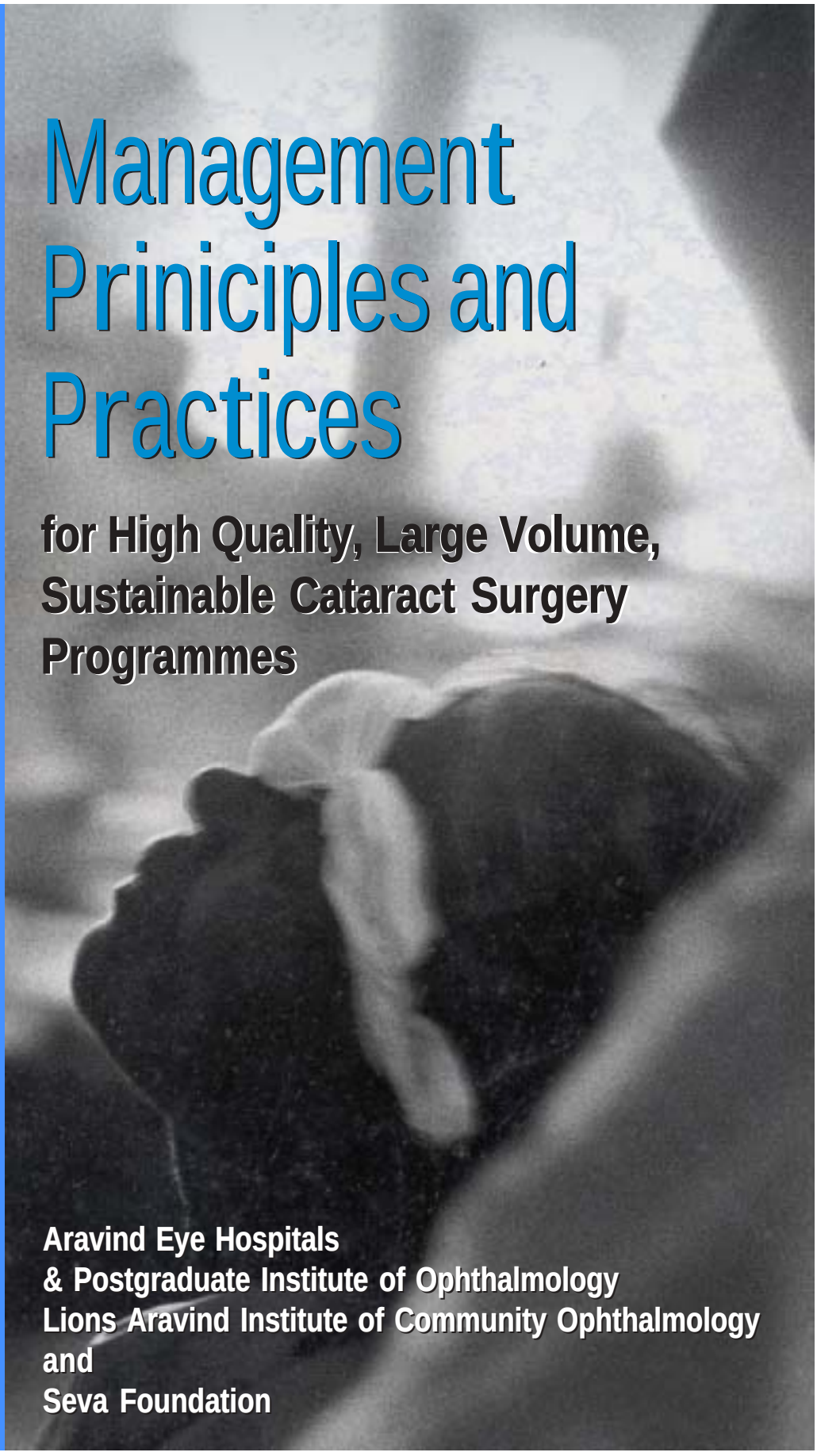
QCS SERIES

Management Priniciples and Practices

for High Quality, Large Volume, Sustainable Cataract Surgery Programmes



Aravind Eye Hospitals
& Postgraduate Institute of Ophthalmology
Lions Aravind Institute of Community Ophthalmology
and
Seva Foundation

QCS SERIES

Management Principles and Practices

for High Quality, Large Volume, Sustainable Cataract Surgery Programmes

The Quality Cataract Surgery Series is a set of modules explaining principles and techniques for developing high quality, large volume, sustainable cataract surgery programmes, especially in settings where cataract causes much needless blindness. Each module is based on the practices of Aravind Eye Hospitals in South India, with input from other successful programmes.

The set includes the following modules:

- Introduction
- Clinical Strategies
- Paramedical Contributions
- Management Principles and Practices
- Community Outreach Initiatives
- Financial Sustainability
- Architectural Design

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This series of modules can be improved with your help. If you have ideas or suggestions for ways the QCS series could better meet your needs, please write to the QCS Series Editor c/o Aravind Eye Hospitals. We welcome your comments and experiences. Thank you for your help.

Quality Cataract Surgery Series
Aravind Publications / LAICO
72, Kuruvikaran Salai, Gandhinagar
Madurai 625 020
Tamil Nadu, India

Phone : 452-537580
Fax : 452-530984
E-mail : communications@aravind.org

Contents

About the Senior Author

Mr. R.D. Thulasiraj (Thulsi) has served as the Hospital Administrator of Aravind Eye Hospitals since 1981, and as Executive Director of the Lions Aravind Institute of Community Ophthalmology (LAICO) in Madurai, India since 1997. He graduated in 1973 from the Indian Institute of Management (Calcutta) with Master's in Business Administration, spent one year as a visiting scholar at the University of Michigan (Ann Arbor, USA), and worked as Systems Manager for Berger Paints in Calcutta.

His major activities, in addition to being the administrative head of Aravind Eye Hospitals, have included attending World Health Organization planning meetings, participating in the national planning for blindness control in India, teaching in Nigeria and the International Centre for Eye Health in London, and facilitating Vision and Capacity Building workshops for more than 100 hospitals from India and other developing nations. Thulsi currently serves as Regional Chairman of the International Agency for the Prevention of Blindness, South East Asia Region.

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Introduction

Important note about philosophy and principles

The management principles and practices explained in this module are based on the philosophies, ethics and experiences of Aravind Eye Hospitals in South India, and the international NGO Seva, based in the USA and Canada, and Lions Aravind Institute of Community Ophthalmology (LAICO).

Management at Aravind Eye Hospitals, which results in over 160,000 cataract surgeries being performed each year, is based on the philosophy of "compassionate capitalism." This philosophy, when well understood, has the potential or replication in all settings.

Compassionate Capitalism

- Charging the lowest possible amount of money in order to grow and become self-sufficiency, while still providing affordable eye care services (maximising service delivery). This is in marked contrast to how capitalism usually works where the provider charges the highest possible amount of money or "what the market will bear" (maximising profit margins).
- Choosing to use excess revenues and excess production capacity to do work for the poor at subsidised prices or for free.
- Managing finances properly in order to generate excess revenues and utilise that money to subsidising low paying or free work, and for expansion.
- Focusing on building up the institution rather than increasing personal income or return on investment for stakeholders.
- Employing social and service marketing strategies and appropriate distribution channels to make the services accessible to the poor and underserved.

Our hospitals demonstrate that eyesight can be restored to all people, irrespective of social or economic status, if we can combine modern technology and management with spiritual practice. When we grow in spiritual consciousness, we identify ourselves with all that is in the world, and ther is no exploitation. Spiritual discipline and practice can enhance the capacity of the body, mind and heart, and make them better tools.

- Dr. G. Venkataswamy

Seva's sustainability philisophy guides Seva's work in eye care by applying the following fundamental principles

- People should receive high quality care regardless of their ability to pay. Seva and its partners have demonstrated that it is possible to develop eye care programmes that are financially self-sufficient and still provide high quality care for the poor.
- Eye care programmes can and should be staffed and managed by local people. To this end, much of Seva's work focuses on providing clinical and management training for programme partners. Programme ownership resides with the local partner.
- Limited resources available should go to the most prevalent causes of blindness. Seva seeks to put its effort where it can do the most good. It focuses on cataract blindness because of the overwhelming need, particularly in Asian countries. However, all programmes are designed with the ultimate aim of providing comprehensive eye care prevention and treatment services.

- Eye care programmes should make efficient use of local resources. Programme goals are established with the needs of the local region in mind. Seva seeks to bring only those resources (people, skills, methods, materials, money) that partners identify as needed from the outside and that will complement and strengthen the local resources.
- Regular objective evaluation of the programme's impact on blindness among the population guides programme planning.
- Quantitative and qualitative evaluation are integral to the programme and are constantly fed into programme planning so as to build on strengths and learn from mistakes.
- Eye care programmes can and should become self-sustaining. Seva provides technical assistance and training to build local capability so that the eye care programmes will ultimately be self-sufficient in finances, technology and human resources. Training includes not only clinical expertise, but also the managerial and leadership skills to assure the programme's success.
- Eye care programmes should honour and build on the cultural and spiritual traditions of the people the programme is designed to serve.

Rationale

Developing a high quality, large volume, financially and socially sustainable cataract surgery programme requires excellent infrastructure, highly trained and motivated manpower as well as necessary equipment and supplies. However it is effective management system that ensures that high quality and large volume eye care services are maintained. In order to ensure that cataract services are provided efficiently to a high standard in a sustainable way, many nonclinical activities must be carried out to complement the performance of the clinical team. The clinical service may also need to be re-designed to facilitate this.

Inadequate planning and management of eye care services is a significant factor in the continuing increase in global blindness, as it leads to ineffective and inefficient use of limited resources. The aim of rigorous planning and management is to have the eye care programmes provide large volume and high quality eye care services at an affordable and sustainable cost.

- R. D. Thulasiraj and Dr. Allen Foster

The core challenges in extending eye care facilities to a wider population are developing and managing the following resources:

- Infrastructure,
- Skilled clinical and managerial staff
- Equipment and supplies
- Involvement of the community.

In several cases where these resources already exist, they are under-utilised due to lack of effective management systems. The approach for tackling many of these challenges revolves around management.

It is important to recognise that the functioning and benefits of such a management system are not limited to cataract services but extend to the entire hospital, eye care programme or ophthalmological practice.

The management considerations and examples in this module are drawn from the experiences of Aravind Eye Hospitals in Tamilnadu, India, LAICO's experience in working with over 100 eye care programmes in India and other developing countries, and Seva-promoted Rana-Ambika Lumbini Eye Hospital in Nepal.

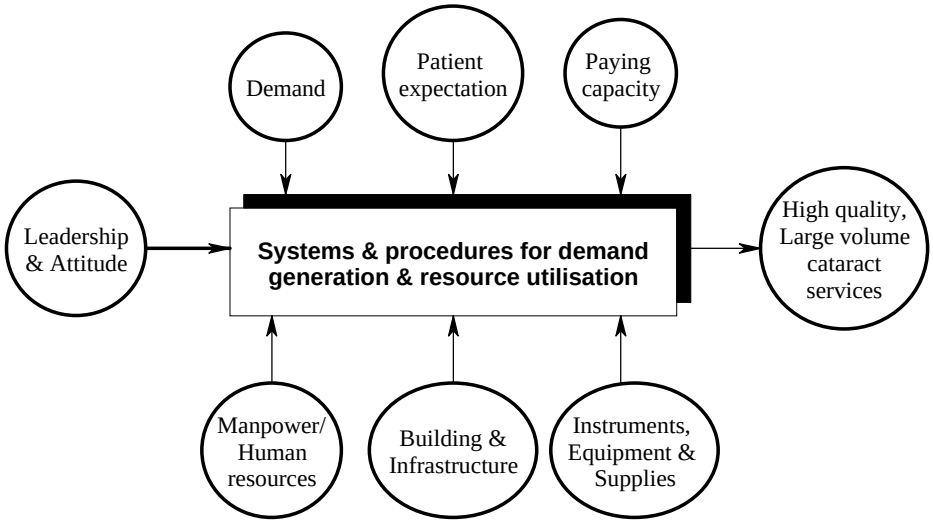
Objectives of the Management Module

- To share lessons learned in managing eye care facilities in the context of developing nations.
- To give details of effective management systems that can lead to high quality, large volume, financially and socially sustainable cataract surgery programmes
- To help those responsible for managing large volume cataract surgery programmes to choose an appropriate management style, strategies and framework
- To describe the systems that are essential for large volume cataract surgery programmes

Management Frameworks

Productivity and high quality are important end results of effective management. These end results are dependent on

- Strong leaders who build vision, commitment, positive attitudes, and a sense of mission
- Increasing the uptake for eye care services through outreach and demand generation activities, health education, and social/service marketing
- Quality and size of human and other infrastructure resources
- Quality and number of instruments, equipment and supplies
- Systems and procedures that optimise the utilisation of all of the above resources



My advice to other programmes who want to offer high quality, large volume and financially sustainable cataract surgery? Ensure high quality surgery. Never compromise quality for quantity. Use health education and social marketing to create large volume. Invest in appropriate manpower. Ensure maximum utilisation of your working hours.

- Dr. S. K. Shrestha, Lumbini Eye Hospital, Nepal

Provider's attitude:

Fundamental to bringing about changes in the delivery of eye care services is the attitude of providers towards Quality, Volume and Sustainablity. The very first step would be to develop an openness to these concepts, an understanding of the issues, and a real willingness or desire to reach out to a larger number of people.

Understanding high quality:

When industries produce and market a product, good quality is always associated with high sales. In fact, whenever a product has low demand or sales, the first concern raised is about the quality of the product. However, in the health care field, many people find it difficult to accept that larger volumes can be achieved without sacrificing quality. Some firmly believe that it is not possible. It is important that this outlook change. Just as in industry, appropriate systems, quality standards, monitoring and management practices can be and put in place in order to ensure high quality in large volume eye care. With such organisation, high quality need not be in conflict with large volume, nor sacrificed in the pursuit of productivity.

In the Philippines, it is standard procedure to do several preoperative tests routinely on all cataract patients, which makes it very expensive. A team of Filipino ophthalmologists and eye hospital administrators visited Aravind Eye Hospitals and discovered that the quality of cataract surgery outcomes is still high with very limited routine tests and additional tests done selectively based on clinical judgement.

Understanding large volume:

Given the high and growing backlog and incidence of cataract blind in many developing countries, there is an urgent need to move beyond the debate of whether high quality can be achieved in large volumes. Since methods for preventing cataract formation and its progression are still not determined, the only way to solve the increasing backlog of cataract blindness is to do a significantly higher volume of cataract surgeries. Given the limitations in creating additional resources and the delay involved, a practical option available is for existing programmes to increase their productivity. With proper organisation and the right attitude, it is not only possible to achieve large volume and high quality but it is something that must be done immediately in the face of a rising backlog of cataract blindness.

Understanding Sustainability:

Sustainability is not limited to financial viability or becoming self-reliant or self-sufficient over the short term. It is the process of building a patient-oriented organisation with strong management systems, competent clinical and administration manpower, cost effectiveness, and optimum utilisation of resources, all of which contribute to sustainability over the long term. It is a process of becoming self-reliant in providing clinical services and in managing the programme efficiently without depending on external human resources such as expatriates. It means building a lasting programme, one that honours its social and environmental responsibilities and is focused on its mission.

Financial sustainability means having stable income sources, which are not influenced by the uncertainty of external funding, at a level higher than the expenses. Since eye care services, especially cataract surgeries, are largely curative by nature and occur across all economic strata, they offer the opportu-

nity for raising the required funds from patient revenues. This can be achieved through effective financial management, including:

- Appropriate pricing of services
- Cost recovery and cost control measures
- Promoting the use of Intraocular lens (IOL) and sutureless small incision techniques, which attracts patients for early cataract surgery-when they are still earning money.

(See the Financial Sustainability Module for key considerations in acheiving the goals of cost recovery and financial self-sufficiency.)

The analysis in this module will give a better understanding of how management functions contribute to high quality, large volume and sustainability in cataract surgery programmes. The chart on the next page summarises the various management principles and practices that lead to higher quality and larger volumes while ensuring sustainability. Each factor is further explored in this module.

Contributing Factors

	a. High quality	b. Large volume	c. Sustainability
1. Leadership and Attitude	• Pursuit of excellence • Willingness to change • Willingness to learn • Patient-centred attitude	• Commitment to reducing blindness • Willingness to work hard • Teamwork • Discipline in work	• Dedication to the vision • Viewing patient as partner in the healing process • Managing change • Role of compassion
	Leader(s) should • Be available and ascessible at all times • Work within the eye care programme • Be proactive in setting directions and initiating change		
2. Increasing the uptake for eye care services-Demand generation	• Base hospital approach • Case selection • Uniform demand • Forecasting & planning for demand fluctuation • Quality assurance	• Using satisfied patients as motivators • Counselling • Community outreach & involvement • Building an institutional image	• Forecasting & planning for expected workload • Cost containment • Appropriate pricing of services & total cost to patients • Utilisation of community resources
3. Manpower and Human Resources	• Trained staff • Technical skills • Task-to-skill matching • CME	• Motivation for productivity • Number of staff • Staff mix • Working hours • Job allocation	• Job descriptions • Regular & seasonal workload vs manpower planning • Recruitment & selection • Employee recognition & retention
4.Building and Infrastructure	• Layout • Maintenance • Sanitation & hygiene	• Capacity • Accessibility • Working days and time • Operating theatre layout & work flow • Erogonomics	• Appropriate building technology & materials • Flexible & functional building design • Durability & ease of maintenance • Design using natural resources

	a. High quality	b. Large volume	c. Sustainability
5. Instruments, Equipment and Supplies	• Good quality products, available when required, purchased from reliable vendors • Calibration	• Good maintenance • Spare parts planning • Number and balance	• Group purchasing • Inventory management • Models easy to repair and service • Appropriate technology
6. Systems and Procedures	• Standardisation • Patient-centred systems • Quality assurance systems • Review Meetings • MIS • Medical records	• Flow of patients, work, money supplies • Resource utilisation • Micro-level planning	• Clinical effectiveness • Periodic review to eliminate redundant systems • Comprehensive information systems • Patient friendly systems

Management Priniciples and Practices

1. Leadership and Attitude

	a. High quality	b. Large volume	c. Sustainability
Leadership and Attitude	• Pursuit of excellence • Willingness to change • Willingness to learn • Patient-centred attitude	• Commitment to reducing blindness • Willingness to work hard • Teamwork • Discipline in work	• Dedication to the vision • Viewing patient as partner in the healing process • Managing change • Role of compassion
	Leader(s) should • Be available and ascessible at all times • Work within the eye care programme • Be proactive in setting directions and initiating change		

Introduction

Effective leadership is fundamental to every organisation. Clinical and managerial functions by themselves, however well performed, are not adequate for building a dynamic, vibrant and sustainable eye care programme; leadership is a necessary ingredient.

Leadership is not simply about being an excellent ophthalmologist or having strong management skills. It has more to do with creating a vision, setting direction, defining priorities, and most importantly, motivating and inspiring people to relentlessly pursue the vision. In an eye care programme, it has to do with developing a work environment that fosters dedication, innovation, excellence, and a positive attitude toward the work that must be done to ensure high quality, large volume and sustainability. Leadership comes from a person, but it can be institutionalised to some extent by the "culture" in the workplace.

Leadership is different from management, but not for the reasons most people think. Leadership is not mystical or mysterious. Nor is leadership better than management or a replacement for it. Rather leadership and management are two separate and mutually supporting systems of action.

- John P. Kotter

Leadership complements management; it doesn't replace it. Leadership is
- **setting a direction versus planning and budgeting,**
- **communicating a vision versus organizing and staffing,**
- **motivating people versus monitoring and problem solving.**

Leadership is generally with reference to people. Management is usually about the organisation and its systems and procedures. Management is about dealing with complexity. Without management, complex organisations will become chaotic. But leadership is dealing with change, since the external and internal environments — as defined by demand, patient expectations, technology, employee expectations, etc. — are constantly changing.

Organisations manage complexity by planning and setting targets. By contrast, leading an organisation begins with setting a direction — a vision for the future. Management

The most critical resource is clinical and senior management personnel. Strategies must be in place to develop self reliance in personnel, otherwise the programme will suffer from frequent changes in leadership provided by such key personnel. This process of direction setting or "doing the right things" (as distinct from "doing things right") and aligning all the employees in its pursuit, is the leadership function. This leadership function needs to be internalized within each eye care programme as this is the foundation for sustainability. The leadership function and responsibility needs to be passed on through training and motivation.

- R. D. Thulasiraj and Dr. Allen Foster

achieves the plan by creating an organisation structure and set of jobs. The corresponding leadership activity is helping the staff understand the vision and develop a commitment.

Finally, management ensures that the targets are met by monitoring the results. But leadership achieves the goal by motivating, inspiring and keeping people moving in the right direction.

The ultimate act of leadership is developing other leaders with a shared vision and in the context making permanent a spirit of "compassionate capitalism" in all the employees. One way to develop leadership is to create challenging opportunities for young employees. Sometimes this is done as part of a formal succession planning or high-potential development process; often it is more informal.

- Adapted from John P. Kotter, What Leaders Really Do, Harvard Business Review, 1990

Probably the most important role of a leader is to help all staff feel that they are important contributors to the eye care programme. Showing that everyone's job counts, that every single job-even the most junior-contributes to the whole, will inspire staff at every level to work to make the vision come true. A true leader will know at least a little bit about everyone's job. A true leader will be able to relate to the janitors as well as the surgeons. A true leader will exhibit all the attitudes and behaviours described below, and will inspire staff to adopt them too.

1.a. Role of leadership in quality

Even with the best infrastructure and perfect systems in place, positive staff attitudes are necessary for achieving excellent results. In a dynamic environment such as a hospital, it is impossible to predict every single activity and to specify every single procedure. Therefore, positive attitudes must be developed and nurtured in all staff to keep them striving for high quality standards and constantly improving upon them. The leader must develop and exhibit these attitudes in the day-to-day activities and must believe that high quality and large volume can go together. Important attitudes to develop and nurture are:

- Pursuit of Excellence

Mediocrity and sloppiness have no place in a high quality, large volume cataract surgery programme. Staff must be willing to do their best in the pursuit of excellence. Working in a successful eye care programme requires perfection in clinical areas. In patient care and patient satisfaction, the aim is excellence.

You can see from my arthritic hands that I had to learn how best to train my fingers to hold a surgical knife, when for years I couldn't even hold my pen. But I wanted to be the perfect surgeon. Sometimes I had to perform operations on hundreds of patients each day. How I would pray for the divine grace to do that and to get my physical body to help. What you need is the higher power to make your mind perceive truth. You want your life force to lose all hatred, jealousy and envy, and to look instead for courage and love. You want to surrender absolutely to the divine, to perfection, to whatever you may want to call it. You do not want anything egotistical within you. It is an experiment you are constantly conducting.
- Dr. G. Venkataswamy

- Willingness to Change

Staff must be flexible, responsive and accommodating, on a day-to-day basis as well as over the long term of the programme. The leadership must demonstrate this flexibility and openness to new ideas, and reward it in employees. This is becoming increasingly important in view of technological developments, explosion in the information technologies, increasing awareness and changing patient expectations. Even within the system, the values that drive the employees are very different from the past, and organisational loyalty is being replaced by career growth.

- Willingness to Learn

External and internal changes as described above necessitate constant learning. Resources must be made available for learning new tricks and techniques for maintaining or improving the quality of work in the changing environment. The leadership of the organisation must provide opportunities for training and learning.

- A "Patient-centred" attitude

Understanding the needs of patients and doing what is best for them should be seen by staff as the core purpose of their work. This should reflect in all the staff trying to make each patient feel as comfortable and cared for as possible, and striving for the best possible visual outcome for each patient.

Doctors have many patients to see. But do they really see the patient, or just the patient's wallet? Do they see whether the patient is a rich man who is going to pay them well, or do they see his soul and really become interested in his problems? Try to see a patient's inner being. It is a very, very interesting experiment. I used to see many rustic, unsophisticated, ordinary village men and women as patients. But when you contact their inner being, suddenly you seem to be one with them.

- Dr. G. Venkataswamy

1. b. Role of leadership in large volume

Productivity will stem from the following attitudes:

- Commitment to reducing blindness

Leaders must exhibit their concern for the level of blindness in the community and their strong commitment to address it. Staff must be made aware of the magnitude of blindness, as well as the difference they can make. Leaders and managers must believe in and teach about "the power of one."

- Willingness to work hard

Willingness to do large volume and to view this productivity as an enjoyable challenge is vital. Disgruntled or unwilling employees might knowingly or unknowingly sabotage systems designed to increase efficiency. The vision of the organisation must be imparted to staff, hopefully in such a way that they can cheerfully adopt it and diligently work toward it. This motivation is an important role of the organisation's leadership.

The most rewarding part of my job is that there are so many patients, so much work, that once I get into the hospital I tend to forget the rest of the world. This is almost equivalent to meditating where one tries to shut off the whole world and concentrate on a particular thing. The most interesting contrast between meditation and my work is that for the former I have to try, but the latter is effortless.
- Dr. Datta, Aravind Eye Hospital, Theni, India

- Teamwork

Productivity demands smoothly running teamwork. The ability to work as a team member is very important. Leaders and managers demonstrate this attribute in their own work and constantly work on strengthening the team. Participative management style can help in building and strengthening the team.

- Discipline in work

Teamwork demands discipline. Discipline comes naturally when staff are trained and confident in the knowledge, skills and attitudes they need for doing their jobs successfully. Again, the leadership must ensure adequate training and supervision, and ultimately responsibility and independence, for employees to gain this confidence and discipline. A well disciplined work force is always admired by the patients and it creates a good work environment, which in the long run leads to employee job satisfaction.

I want to radiate love and goodwill on all occasions, without giving any place in my consciousness to pride or prejudice. I want to love the patients and staff uniformly all the time. But I know that I create a sense of fear in my staff if they come late, or if they are not efficient in their work. This has become a strong habit with me, as I have been keen to maintain discipline in work. I find though that when people are not effective in maintaining discipline, morale declines, and the quality and quantity of work also decline rapidly. If people could grow into the higher consciousness and act from the higher level, they could influence others. Real discipline will come only when people are motivated by spiritual force.

- Dr. G. Venkataswamy

1.c. Leadership and sustainability

Necessary attitudes for helping a high quality, large volume cataract surgery programme carry on include:

- Dedication to the Vision

The leadership must exhibit relentless persistence and perseverance towards the achievement of the eye care programme's vision. In any organisation, over time, there will be ups and downs, set-backs and good times. Leaders must carry the organisation through bad times and maintain a high morale in the staff.

- Viewing the Patient as Partner in the Healing Process

Recognising that the hospital essentially prescribes the treatment but it is patient who implements it through compliance is very important. Even in the case of surgery, the postoperative recuperation is entirely in the hands of the patient. Developing a respect for the patient as a partner in the healing process is very important and has to be shared by all those involved in the healing process. Patient education (in the Aravind model, this is done by paramedical staff dedicated to patient counselling) can lead not only to faster healing and fewer postoperative complications through better compliance, but also to patients motivating others to attend the facility for eye care. Participating in the healing process with full understanding also results in better compliance in terms of follow-up and the use of medications.

- Managing Change

Sustainability comes in part from seizing opportunities for making a difference in a new way. Successfully implementing and managing change is one of the essential functions of good leadership.

- Role of Compassion

If patients aren't treated in an understanding and respectful way by staff, they won't return and they won't recommend the eye care facility to others. All patients must be treated with dignity, and staff must try to understand patients' disabilities, discomfort and fears. It is the role of leaders to model compassion.

Some of my friends have asked me how we have trained our staff people in "the Aravind culture." An industrialist from Delhi once came and said, "I need to build a hospital, and I am very much impressed with your hospital. Could you come and start a hospital in Delhi for me?" I asked, "What is it you want? You have all the money you need. It is not difficult for you to put up a hospital in Delhi. Why don't you do it?" He said, "No, I want a hospital with the Aravind culture. People are cordial here. They seem to respect people more than money. There is a certain amount of inner communion or compassion that seems to flow from them. How do you do it?"
- Dr. G. Venkataswamy

Availability and accessibility of the leadership

It is not enough that the leader possess all the above virtues, characteristics and qualities. The person in the leadership position also must be available and accessible almost at all time and be within the eye care programme. Furthermore, he or she must also be proactive in setting new directions and initiating change.

In many situations, especially in government and many mission hospital settings, the leadership lies outside the actual eye care programmes. In the government setting it is sometimes difficult to trace what centralised office the leadership comes from. In the mission set-up it is often a senior religious leader who heads the hospital and several other organisations as well. By design, such leadership cannot be involved in the development and day-to-day leadership inputs to the eye care programme as described in this module. Hence these leaders tend to manage by a set of rules that applies across all the organisations or departments they control, leading to inflexibility and bureaucratisation. Often major policy or programme decisions when brought to such leadership, receive very little consideration and are handled with a "yes or no".

For an organisation to be vibrant and sustainable it is important that the leader not only be available whenever needed or wanted, but also be proactive in the development of the programme. This is fundamental to improving quality, productivity and to achieving sustainability.

2. Increasing the uptake for eye care services (also see Community Outreach Module)

	a. High quality	b. Large volume	c. Sustainability
Increasing the uptake for eye care services Demand generation	• Base hospital approach • Case selection • Uniform demand • Forecasting & planning for demand fluctuation • Quality assurance	• Using satisfied patients as motivators • Counselling • Community outreach & involvement • Building an institutional image	• Forecasting & planning for expected workload • Cost containment • Appropriate pricing of services & total cost to patients • Utilisation of community resources

Introduction

In most developing countries, the gap between the level of eye care services provided and clinically defined need for treatment is almost 10 to 20 times. In India, for example, an estimated 3.5 million surgeries are done each year on eyes blind due to catarct against an estimated backlog of 23 million eyes. The current level of surgery is yet to equal the incidence. Compared to the overall capacity of beds, ophthalmologists and other resources, the number of cataract surgeries done is quite low. Hospital surgeries per bed per year is sometimes as low as 15 while it could be as high as 100.

This indicates an urgent need for stimulating the demand and uptake. The clinically defined need will have to be converted into a need felt by the patient, through provision of affordable eye care services that meet patient needs, accompanied by health education and motivation. Delivery mechanisms will need to be in place that ensure accessibility and affordability. Activities for increasing the uptake must be a structured part of any eye care programme. Attention will need to be paid to maintaining high quality while attempting to increase the patient load.

Two main approaches can be employed to get patients to the hospital. The first approach is reaching out to potential patients through eye camps and outreach activities and bringing them to the hospital. The other approach is to attract patients to come to the hospital on their own.

2.a. Ensuring high quality while increasing the uptake

Increasing the uptake for cataract surgery services is counterproductive if high quality surgery and care cannot be provided. Several factors contribute to ensuring high quality, even with extremely large volumes of patients.

- Base Hospital Approach

An important approach that can lead to better quality is the "base hospital approach." When the eye camp approach began in India the 1930s, it was always done in makeshift places, since the hospital and logistic infrastructure in the country was grossly inadequate. In the last six decades, this has changed

Limited bed availability prevents large volume cataract surgery in some hospitals. Eye camps provide opportunities for large volume surgery, but facilities are not available throughout the year. At a resident or base hospital, space is available to conduct large volume surgery. It is possible to maintain a "factory-like" efficiency with this approach. The services are of the highest quality and the manpower can be used optimally and efficiently in am economical manner.

- Dr. G. Natchiar

considerably. Most people in India, for example now live within an hour of travel from a hospital (a primary health centre or an eye hospital). This offers an opportunity for screening potential patients in the community and transporting them to a hospital for surgery rather than doing the surgery with makeshift arrangements in school buildings or commuity halls.

This approach can significantly improve the quality of treatment and reduce costs as well. In the base hospital, there is better control over the resources; in well-run hospitals, these resources are organised for optimum utilisation. Patients with diabetes or hypertension can stay a day or two longer before surgery and similarly patients with postoperative complications can stay longer after surgery. This will increase both the uptake and the outcome. This is not possible in a surgical eye camp as the venue has to be vacated by a certain date.

Hospital-based surgery also has a positive impact on health-seeking behaviour. Having been through the hospital process, patients are more willing to come on their own for follow-up or to bring a friend or relative for treatment. This, of course, is based on the assumption that the patient returns home satisfied with the experience in the hospital. Of course, "factory-like efficiency" does not mean mechanical behaviour. Well-designed systems can blend this efficiency with a human and caring environment.

- Case selection

Careful attention to case selection will influence the visual outcome following cataract surgery. The case selection process in an eye camp or hospital and the preoperative evaluations should incorporate necessary steps to ensure that the patient does not have any co-existing infections, systemic diseases or other eye problems that could seriously compromise the outcome and future visual acuity. Establishing clinical guidelines and ensuring that they are followed can help achieve this. (refer to the Clinical Strategies Module)

- Uniform demand

Eye care services, like other health care services, often face demands for services which fluctuate monthly, daily, or even by the hour. Health care services can't be produced and stored for later delivery. Neither can the resources be increased at very short notice. Delivery of eye care requires specially trained manpower specifically oriented to the programme. Patients do not want to wait for that. In developing countries, where there is a constant shortage of trained manpower, it is not practical to lay off staff at slack times and re-employ them at peak times.

Theoretically, the staff of one programme can be deputed to another with peak load, but from a practical standpoint this may not be possible due to lack of coordination and the unwillingness of the staff to go and work elsewhere. However, when the demand fluctuates in the whole region or country, such as low demand in summer and peak demands in winter, even such transfers are not possible. During the slack months, the staff is idle, which not only drives the cost up but also lowers employee morale. During the peak period, the manpower is not adequate and this leads to stress being experienced and subtle compromises

in the delivery of services. Strategies for increasing the uptake should be designed to produce uniform demand. For instance, during the lean months more screening eye camps can be conducted to increase the patient load.

- Forecasting and Planning for Demand Fluctuations

Since a hospital's capacity cannot be changed at short notice, fluctuations in demand can adversely affect quality. Developing an infrastructure to do five surgeries every day or 50 surgeries every day is only a question of investment and organisation. But when a hospital with a capacity to do five surgeries a day is required to do 50 surgeries due to sudden inflow of patients, compromises in quality will result. Thus managing demand fluctuations is critical to maintaining quality and control costs. This can be addressed somewhat by predicting the demand fluctuations and planning accordingly. Admissions can be staggered or arrangements can be made in advance with one or more ophthalmologists in the area to come and help out at such instances of heavy patient flow.

- Quality assurance (see Appendix 5)

Quality standards are relative and are driven by the availability of technology, levels of communication, patient awareness, local economic factors, and the state of the environment. What was acceptable as good quality 15 years ago will be frowned upon now with the advent of newer technologies. What is considered to be good quality in one country may not be acceptable in a more developed country. When it comes to quality, it is important to recognise that it is the patients' judgement of quality that counts and not the providers'. The qualtiy of patient care has two dimensions.

We insist on high quality care in diagnosis, surgery and all treatment, whether the patient is from a rural or an urban area. Some doctors are open to spiritual influence and appreciate the opportunity to work in Aravind eye hospitals....We do try to motivate our staff to achieve excellence in their surgery and publications, and some of them are internationally known for the quality of their work....Every opportunity to work and to keep this high quality in our work is my spiritual aspiration.

- Dr. G. Venkataswamy

Quality of clinical care: While the patient is the best judge of the visual outcome, the patient has little or no understanding of the quality of the clinical process. Most patients can't appreciate the type of surgery performed, the number of sutures, section done, or any of the finer details of the surgery that contribute to the successful outcome. In other words, in most instances the patient is not going to influence or dictate the details of how the surgery or examination should be done. Hence the pressure to maintain high clinical standards and to constantly improve has to come from within the system.

Good clinical outcomes produce good visual outcomes, which are fundamental to attracting patients. Even the poor patients who seek free care are quite discerning about the quality. At one time, patients from Nepal used to go to India for their eye care. The fact that the trend is now reversed, with Indians in the border areas going to eye hospitals in Nepal, is ample testimony to the patient's capacity to differentiate between good and mediocre quality.

There should be a process for constantly monitoring clinical quality. Quality assurance systems are vital. Good medical records and periodic medical audits can help ensure quality. A routine recording of factors such as visual outcome, visual improvement, intraoperative and postoperative complications, plus monthly analysis of the data can help in quality assurance.

Another way of improving clinical quality is to establish a benchmarking system for comparing clinical outcomes and complication rates. Such a system can be established across willing hospitals and within a hospital to compare the outcomes of different ophthalmologists or over time periods. This can be done in a way so that identities are kept confidential to facilitate improvements in a

non-threatening manner (see Benchmarks in the Appendix - 1)

Quality of non-clinical care: This relates to staff behaviour, communication, comfort levels, amenities, cleanliness, waiting time, transparency in systems and procedures, dignity of treatment, perceived value for money (hospital charges), etc. All patients, rich or poor, are able to judge non-clinical care from their won perspective (and that is what counts). All facilities should constantly strive to improve this aspect of quality in comparison to other providers and by getting the patient feed back. Patient feeback can come from several sources:

- Complaints and suggestions book
- Patient satisfaction survey (refer to Appendix 5 for a model survey form)
- Structured interaction with the hospital staff

Since quality standards are relative to time, technology and patient expectations, it is important to be aware of new developments and changes in patient expectations and to constantly make necessary changes. Paying patients in particular have a significant impact on quality. Compared to free patients, the paying patients tend to be more demanding of service standards and are willing to make suggestions. They are not willing to put up with outcomes or services that don't meet their expectations. They usually check around before coming to the hospital and tend to compare the quality with other hospitals. This sort of an external pressure is necessary. Taken in a constructive spirit, these criticisms help to constantly improve both dimension of quality.

2. b. Strategies for generating large volume

Strategically, increasing the uptake for high quality cataract surgery is the number one way to become finally viable, because it is the increasrd volume that brings down the cost per surgery. For this reason and from the perspective of clearing the backlog, demand generation becomes a crucial function for an eye care programme. Several approaches are possible. Taken together, they can lead to a rapid increase in patient volume.

- Using satisfied patients as motivators

As mentioned earlier, an important dimension of quality is the calibre of non-clinical care. These aspects of care are well understood by the patients and their relatives, and all patient has a level of expectation in this area. The treatment they receive determines the stories they tell back in their community. Satisfied customers are the best salespeople for the hospital, at no cost to the programme. Systems and procedures should be constantly reviewed to ensure that the quality of nonclinical care becomes/remains high. This can be assessed through compliment and complaint registers, suggestion books, and periodic patient satisfaction surveys. In simple terms, quality pays. It doesn't cost. The patients at the time of discharge can be encourged to refer to the hospital other patients in need of cataract surgery.

- Counselling

Effective counselling helps in motivating patients to accept surgery and reduces the number of dropouts. It also helps to enhance patient satisfaction by moderting their expectations and by allowing quick reactions to meet their needs. Using operated patients as motivators is possible through active counsel-

ling. At the hospital, trained patient counsellors can be employed to encourage patients to accept medical treatment and also to answer patients' queries (see Paramedical Contributions Module). The patient counsellor should be capable of establishing personal contacts with patients, educating the patients on proper eye care, assisting them in following the hospital procedures, and ensuring that the patient's needs are met during their stay in the hospital.

- Community outreach and involvement (see Community Outreach Module)

Eye care programmes with community partnerships have multiple benefits. They lead to more successfu eye camps, they conserve programme manpower, and they create a cadre of local supporters who become committed through volunteer work. The community is familiar with local community groups and hence when they organise an eye camp the attendance is much higher than if the hospital did all the work itself. It also makes it possible to organise a large number of screening eye camps since most of the organising work at the community level is done by the community group partnering in the eye camp.

We had nearly 200 patients to operate on at the very first camp, and we also had to feed them for a week before sending them home. Without asking, community leaders and volunteers came forward with enormous support, and fed the patients after the operations. It was a wonderful response, and the camps became very popular with the people. We organised more and more camps, and once performed over 700 cataract operations in one day, a world record at the time. We gave patients free food and free spectacles....Local industries and businesses gave us much support

- Dr. G. Venkataswamy

The following chart shows the numbers of cataract surgeries performed at Aravind Eye Hospital in Madurai in a three-year period. It can be seen that patients who came through eye camps, all of which are organised with the support of voluntary organisations in the community, account for close to 50% of total cataract surgeries.

Performance of Aravind Eye Hospital, Madurai

	1998	1999	2000
Total cataract surgeries	69,535	77,394	78,349
Cataract surgeries through camps	28,338 - 40%	38,338 - 49%	44,394 - 56%
Number of eye camps	560	559	577

- Building an institutional image

Every satisfied patient has the potential of being a motivator for getting more patients to the hospital. "Word of mouth" has the maximum impact in marketing services to potential patients. Developing a good reputation and a positive institutional image are important for getting patients to come to the hospital on their own. The hospital should ensure that patients are satisfied with the services of the hospital and the outcome of their surgery. Significant investment in this approach is worthwhile as it provides a stable demand base for the hospital and can drastically reduce the cost of case finding through outreach activities.

2. c. Demand generation strategies and sustainability

The arithmetic for sustainability is simple. Satisfied patients = more patients = more cataract surgeries = lower cost per surgery. (See Financial Sustainability Module for formulas.) Any strategy that contributes to the quality of surgical outcomes, to the number of surgeries performed, or to keeping the cost of surgery low will help the programme remain viable.

- Forecasting and planning for expected workload

The quality implication of this has been discussed earlier, with the cost implication covered here. The problem of workload variations can be addressed somewhat by predicting the demand fluctuations and planning accordingly. All non-patient activities like staff training, major maintenance, conferences

and workshops can all be scheduled during the slack periods. An attempt can also be made to even out the demand by a better understanding of the reasons for the fluctuations. If logistics of travel are a problem during the monsoons, the appropriateness of arranging transportation can be explored. While all this will cost additional money, it would substantially reduce the cost per patient treated. In some centres in Northern India and Nepal, programmes were able to break this annual cycle of high and low demand by conducting screening eye camps in the summer and transporting the patients to the base hospital. Some alternative strategies for managing the variations in demand are reservations (to smoothen day to day fluctuations), active outreach activities (to smoothen seasonal variations) and having developmental activities (training, renovation, etc.) and staff vacation during the lean period. The objective of formulating strategies for managing demand variability is to match the service rate to the demand rate so as to avoid building of queues and long delays. This will also ensure that high clinical quality and patient satisfaction is achieved.

- Cost containment

Cost containment requires linking expenditures with outputs, and making that linkage clear to those who can affect either or both. Thus current and accurate records are integral to cost containment. Control will need to be exercised at the micro level, looking at each transaction. Purchase and payment procedures should ensure that what is needed is purchased at the right time, price, quantity and quality.

Productivity and cost containment

The whole process of using resources efficiently is ultimately reflected in the cost of services. The total cost of providing services can be broadly classified into the cost of running infrastructure and the cost of consumables. The cost of running the infrastructure will cover expenses such as salaries, utilities, maintenance and lease/rental. This cost does not change with the fluctuations in the level of service and hence it is referred to as the fixed cost. In hospital and health care settings, the fixed cost accounts for as much as 70% of the total recurring expenditure.

The cost of consumables, on the other hand, varies directly in proportion to the volume of service (e.g., number of cataract surgeries). Thus it is called the variable cost. If 100 operations are performed, 100 units of consumables are required, and if 1000 operations are undertaken 1000 units of consumables are needed. The total cost of consumables therefore varies in proportion to the volume of service delivery.

Thus the total cost per unit of service, e.g., cataract surgery, can be expressed as:

$$\text{Cost per cataract operation} = \frac{\text{Fixed cost} + \text{Cost of 1 unit of consumables}}{\text{No. of cat. surgeries}}$$

- from R. D. Thulasiraj and Dr. Allen Foster

All I want to sell, to market, if you will, is good eyesight, and there are millions of people who need it badly. Nothing more basic is needed than good eyesight. A man who loses it loses fifty or sixty years of life. If that man canafford to pay me for it, certainly he should pay. If the man cannot afford to pay, still he needs eyesight. So how exactly should the market work?

- Dr. G. Venkataswamy

- Appropriate pricing of services (see Financial Sustainability Module) and total cost to the patients

Pricing:

When the paying capacity of patients is analysed, it can be seen that some patients are willing to pay any amount for good quality ophthalmic services. They might even travel to a country in the West for treatment. A significant segment of patients are able to pay reasonable market rates. They don't mind spending a month's wages on cataract surgery for themselves or their dependents. These are people with regular employment - office workers, tradesmen, factory workers, business people, etc. There is another category that can scrape together enough money to afford a subsidised rate. In this segment of patients, it seldom means mortgaging the house or borrowing the needed money, but more often deciding on the priority between eye treatment and discretionary expenses like drinking, smoking, etc. This might be mostly farm labourers, workers in unorganised sectors of industry, etc.

Apart from the spectrum of those who can pay something to those who can pay anything, there are those who cannot pay, regardless of how low the fee is. In fact, they would need additional support from the programme to provide food and transportation. In India, for example, an estimated profile of patients' ability to pay is shown in Table-?. These estimates can be refined based on the nature of economic activity of the patient service area and other relevant data that may be available.

Category	%
Can pay any amount	5
Can pay reasonable charges	40
Can pay subsidised rate	35
Can't pay any amount	20

Given this economic profile of eye patients, community-oriented programmes that have the social responsibility of reducing needless blindness should attract paying patients with a pricing structure that produces a surplus to support the services for poor patients. The price, the quality of surgery, and the level of comfort influences the demand from paying patients. There could be different prices with varying accommodation and comfort levels, to cater to the different categories of patients and their expectations, including a free ward for the poor patients.

Have our prices changed over the years? Keeping in mind our motto (Quality Service at Affordable Price), we recently raised the price by a nominal increase of Nepal Rs. 300 (about US$5) to cover the cost of the IOL. Everything else has stayed the same price. Our hospital is not in favour of changing the prices frequently, but we consider market inflation and the gradual increase in the cost of drugs. Our experience is that a very thorough patient survey is needed in order to establish affordable prices and before changing the prices. Our principle in pricing has been to cover actual expenses, not to make a surplus by increasing the price. Even though the patients are only charged to cover the expenses, due to the high volume of patient flow, we have been able to accumulate some surplus over the years and are well on our way to being financially sustainable.

- Dr. S. K. Shrestha, Lumbini Eye Hospital, Nepal

Total cost to the patient:

While the fees charged by the hospital could be reasonable, the patient is concerned about the total cost that he or she has to spend on the care, which will include travel, food and other related costs. This total cost has to be affordable. Being sensitive to this and finding ways within the means of the hospital can help in making the services more affordable. For example, in some hospitals, due either to the system of working or to lack of reliability of services, a patient may have to make three or four visits before being admitted. Similarly the preoperative and postoperative stays are longer than necessary in some hospitals and this could be due to following old conversation, lack of confidence or the quality of surgery. Having the patient come for several follow-up visits again increases the cost for the patient. The hospitals are often not sensitive to this and the additional cost implication to the patient. Designing systems for same day admission and next day surgery with the minimal required postoperative stay and follow-up could considerably reduce the total cost and thereby make the cataract surgery affordable to a larger community.

- Utilisation of community resources

Our resource that is poorlyl understood and hardly used when compared to its potential is the community. Community, through its voluntarism and material resources, can substantially improve resource utilisation. Eye camps, for example, always take place in the community. However, in many prorammes, the hospital staff are pressed into service to carry out the publicity, arrange for the camp site, and ensure necessary furniture and accommodation for the medical team, etc. All these activities can easily be done by the community and in all cases can be done better than by the hospital staff. The community knows what resources are available and has a better understanding about employing them for the camp work. They are very happy to make the required resources available at no cost. If they are brought in as equal partners, they can not only do all these activities but also cover the costs. Active utilisation of the community and its resources helps in demand generation, and is a powerful strategy in moving towards sustainability.

3. Man power and human resources

	a. High quality	b. Large volume	c. Sustainability
Manpower and Human Resources	• Trained staff • Technical skills • Task-to-skill matching • CME	• Motivation for productivity • Number of staff • Staff mix • Working hours • Job allocation	• Job descriptions • Regular & seasonal workload vs manpower planning • Recruitment & selection • Employee recognition & retention

In most health care programmes, the term manpower seems to cover only doctors and at best paramedical staff. However, for the clinical team to be productive, someone has to ensure that the patient load is adequately maintained, sufficient supplies are available, and equipment is in good working order. Finances must be available and there must be adequate controls to ensure accountability. Health education and preventive measures must be promoted to reduce the morbidity levels in the community. Hence, there are many activities that need to be performed to complement the performance of the eye surgeons and clinical team in order to ensure that the eye care services are provided both effectively and efficiently.

- R. D. Thulasiraj and Dr. Allen Foster

Introduction

Human resources, both clinical and nonclinical staff, play an important role in the effective functioning of an eye care institution. Finances are essential for new appointments, development of human resources and creating a good work environment, but there are other factors that have a greater influence on the quality of work and productivity.

The following steps will help in ensuring optimum manpower utilisation:

Step 1: Ensure that all functions are adequately staffed:
The broad functional areas are clinical services (outpatient work, surgery, ward work), operations management (day to day administration, control, procurement, etc.), marketing (increasing the uptake for eye care services through community outreach, counselling, developing a referral network, etc.), financial management, human resource management, medical records and support services (dietary, housekeeping, security, transportation, maintenance, communications, etc.). In large programmes one or more persons may be appointed for each of the functions, while in small programmes one person can be assigned multiple functions. What is important is that all these functional activities are adequately staffed and performed.

Step 2: Balance the various categories of manpower:
A large field staff supported by only one eye surgeon will lead to a waiting list for consultation and surgery, resulting in community dissatisfaction, which in turn makes the work of the field staff ineffective. Too few paramedical staff will mean that the eye surgeon spends most of the time either waiting or doing routine clinical activities.

Step 3: Use manpower appropriately:
It will be a misuse of valuable resources if the eye surgeon has to do all the refractions or attend to routine administrative matters such as ordering supplies or making detailed arrangements for an outreach activity. Staff should be utilised in such a way as to maximise their training and skills.

Step 4: Periodically review the quality of manpower:
This will ensure that there is a good match between the demands of the task and the competence of the person performing it. This regular review is important since in any organisation new personnel are appointed, staff are transferred from one job to another, new technology or procedures are introduced and new functions are created,

making the work situation a dynamic environment. Continuing education, through meetings, workshops, etc., can be a useful way to upgrade the knowledge and skills of personnel and to increase staff motivation.

Step 5: Find ways to use the community wherever possible:
The community can provide volunteers to support the hospital work and can be equal partners in the community outreach work. It is important to recognise this opportunity and design systems to actively utilise community resources. This reduces the cost of the programme and more importantly makes the community intervention programmes far more effective. In some situations, industry, schools or the army may depute staff as volunteers to work in a specific project or to staff a regular position for a certain period.
- from R. D. Thulasiraj and Dr. Allen Foster

1. a. Human Resources and High Quality

Quality in cataract surgery is a team effort. This is achieved when all staff members have the basic training to develop the necessary technical skills. Task-to-skill matching and continuing medical education ensure that staff use their skills effectively and continue to develop their skills.

The most important type of training has always been and will always be training on the job. The experience of actually doing something on the job makes a lasting impression that other types of training cannot provide. For new employee training on the job to be successful, supervisors must themselves be trained and motivated to be good trainers.

- from Training and Management Development, in Handbook of Hospital Personnel Management, India

- Trained Staff

It is important that all the hospital staff have the required basic training for doing the job. Such training is recognised as essential for the ophthalmologists and to some extent for the paramedical staff. As far as the others are concerned, the general feeling is that they will learn on the job. While this could theoretically happen, in reality it is often up to the employee to develop the skills on a trial and error method. In the process, the quality of their work suffers and this is one of the reasons for wide disparity in quality between programmes.

In addition to ensuring generic skills, all employees on their appointment should also receive an in-depth orientation to the work culture in the institution. The staff must know how they can employ their skills in a particular organisational setting and what support structure is available. Here again, such orientation can happen over time just by being in the job, but in the process their performance will have been compromised.

It is also a fact that there is a lack of adequately trained personnel in many developing countries and this is a reflection of the training infrastructure in each country. In situations like this it would be desirable to structure the "on the job" training with adequate supervision and assessment if that is the only training option.

The following have been identified by an Aravind team as some of the constraints in implementing proposed action plans for improved and expanded eye care in Cambodia:
- limited funds for training programmes for eye care workers
- lack of training programmes in the country for eye care workers
- nonavailability of trainers for training eye care personnel
- lack of motivation in existing eye care personnel due to poor salaries
- nonavailability or refusal of eye care personnel to work in the provinces

from Illumination, LAICO Community Ophthalmology Newsletter, 2(2), 1997

- Technical Skills

The quality of clinical outcome is largely dependent on the skills of the ophthalmologists and the paramedical staff. Initially the skill levels usually reflect the standards at the institution where they received their basic training. While this may be adequate, it would always be helpful to review the skill levels with those at other institutions as a way of informal benchmarking to identify if any improvements are required.

- Task-to-Skill Matching

Care must be taken to match the tasks to be performed with the skills of the staff member. Tasks that are too difficult due to lack of appropriate training will lead to frustration and often poor quality. Underqualified staff will sometimes skip the hard parts of their job, or not recognise where they need help, jeopardising quality. Tasks that are too simple lead to boredom. Overqualified staff will sometimes allow their attention to wander — again jeopardising quality — or they themselves will "wander" to a more challenging job elsewhere. Under utilising the skills of staff also has a cost implication.

The idea for the [Lions Aravind Institute for Community Ophthalmology] was that it would be an opportunity for us to bring about the happy marriage between spiritual consciousness and modern technology—that is the challenge we face today. Aravind is a model for large-volume, self-supporting cataract surgery, appropriate for developing countries. They need well-trained leaders to plan blindness control programs suitable to different areas. They need training in epidemiology, biostatistics, health planning, operations research, health education, and social marketing. They also need to have an interest in spiritual practice.

- Dr. G. Venkataswamy

- Continuing Medical Education (CME)

Continuing medical education is an important tool in keeping the medical staff abreast of new developments. In the absence of CME, new developments either never happen, or occur at a very slow pace and will be dependent on external resources. CME is also required for staff who are assigned to new clinical tasks for which they don't have the training. The process of training is not a one-time activity, as there are constant developments in the field of health care and more so in the practice of ophthalmology. It must also be recognised that quality is not an absolute standard but it is something that evolves continually based on technological innovations and patient expectations. CME programmes also give an opportunity to interact with the peer group and to hear about new ideas. Thus there is a need to have a system of continuing education and skills development to keep pace with new developments and changing patient expectations. This applies equally to both the clinical and the non-clinical personnel. It is certainly in the eye care programme's best interests to invest time and money in CME and other staff training.

Guidelines for designing training programmes

1. **Training opportunities should be given to all employees irrespective of their age, gender, rank, etc.**
2. **Training programmes should be based on job analysis.**
3. **Training opportunities should be provided throughout the employees' stay in the organisation in order to meet technological changes.**
4. **Apart from meeting immediate demands, all employees should be encouraged to take courses that are likely to improve their prospects for more highly skilled employment.**
5. **A systematic means of assessment should be used while selecting employees for training.**

Purposes of training
1. Rendering better service to patients
2. Reducing wastage
3. Filling higher posts
4. Promoting safety measures
5. Teaching employees to efficiently operate new equipment
6. Keeping abreast of new developments

Advantages of Training
Just as education improves the knowledge of a person, training enhances the aptitude, skill and abilities of employees to perform specific jobs better. The advantages of a training programme are numerous.
1. Training brings about an improvement in the quality and quantity of output, by increasing the skill of employees.
2. Trained personnel can make better use of supplies, instruments and equipment.
3. Training helps to highlight promising employees.
4. Training also helps in locating mistakes in the selection process.
5. Training creates a feeling of security among the employees that they are properly looked after by the organisation.

- from Training and Management Development, in Handbook of Hospital Personnel Management, India

3. b. Human resources and large volume

Several controllable factors such as the staff strength, their motivation and composition, working hours and job allocation determine the volume of work done.

Our large volume comes from having very well trained surgeons, who are extensively supported by highly qualified and very, very dedicated paramedical staff. With one full-time ophthalmic surgeon and three residents, we do about 4500 major surgeries and 500 minor surgeries per year, one-quarter paying and three-quarters free.

- Dr. Datta, Aravind Eye Hospital, Theni

- Motivation for productivity

All human resource activities in a large volume eye care programme must be oriented to productivity. Recruitment, initial hiring, orientation and training activities all provide ongoing opportunities for motivating staff to contribute to the organisation's culture of productivity and large volume. A crucial responsibility of the organisation's leadership is to constantly remind staff of the big picture of needless blindness, and to constantly show staff the importance of their contribution to the solution by treating large volumes of patients.

- Number of staff

A variety of skill sets are required to perform the different activities involved in a community-oriented eye care programme. In order to provide reliable service, all required departments must be created and staffed appropriately. For instance, all cataract surgery programmes should ideally have at least two ophthalmologists to ensure that at least one is available at all times.

Use paramedical staff in the correct ophthalmologist-to-paramedical ratio (usually one ophthalmologist to five paramedicals) in order to free up ophthalmologist time to perform surgery and to lower costs by utilising less expensive professionals.

- David Green, Seva Consultant

- Staff mix

The combinations of clinical staff, especially doctors and ophthalmic assistants, should be carefully considered in order to facilitate better utilisation of resources. In the operation theatre, for example,the doctors should be concentrating on the surgical procedure while the paramedical staff can carry out all the preoperative preparations. Ideally, the ratio between the ophthalmologists and the paramedical staff (refraction, outpatient, ward and operation theatre staff) should be 1:4 or 1:5 as determined by the work distribution.

There should be a separate cadre of administrative staff to take care of all the administrative duties and to cater to day-to-day operational needs of various clinical areas such as scheduling of staff, scheduling of patients, report generation, management of supplies, patient feedback, and tackling a crisis situation or other administrative issues. There should also be one or more persons with the specific responsibility of increasing patient uptke through outreach activities, counselling, referral networks etc.

- Working hours

Larger volumes can be achieved with a larger number of staff in the right composition working longer hours. This doesn't necessarily mean a longer work day, however. It might mean allowing the surgeons to perform surgery for several hours each day rather than just one or two hours. This allows them to develop greater speed along with greater skill. It might mean keeping the outpatient department open longer, so that patients coming from longer distances can be examined the same day. In many hospitals the outpatient registration timings are restricted to a few hours a day thereby decreasing the number of patients who can be seen each day.

What allows us to do cost effective cataract surgery? Large volume surgery brings down the per unit cost of cataract surgery, so we try to do more and more surgery per day. We also try to do maximum surgery with minimum staff by fully utilising every staff member's time, with one ophthalmologist using two operating tables, for example. Maximum utilisation of working hours and using well trained clinical and paramedical staff avoids unnecessary costs.
- Dr. S. K. Shrestha, Lumbini Eye Hospital, Nepal

- Job Allocation

A number of clinical tasks are involved in diagnosing or treating a patient. Some of these are routine and repetitive by nature while others are complex and require fine clinical judgement. In many settings, an ophthalmologist does the entire range of clinical tasks including the routine ones, which are often the most time-consuming. With proper training, paramedical staff can perform many of the routine tasks regardless of how specialised they are or how sophisticated the equipment involved. Paramedical staff can be taught to perform a range of activities from the simple task of measuring visual acuity to the use of A-scan or computerised field analysers. Building this concept of "smarter working" by allocating routine work to the paramedical staff can significantly increase the volume of work that an ophthalmologist can do. The same principles can be applied to management tasks of the manager as well.

We also have tried to achieve the efficiency of a factory assembly line at Aravind. Four of our doctors assisted by twelve nurses could do about one hundred cataract operations in one day. This is something new to the ophthalmic world. How on earth do you set up to do a hundred operations? When visitors came and saw it, they were very happy. Although we are doing a large volume of operations, the quality doesn't suffer. We have a system and we can control its efficiency. This also helps to bring the cost down.
- Dr. G. Venkataswamy

Offering continuous training to our staff has increased their motivation to work hard and to keep quality high. We offer extra responsibility to staff who are able and energetic. High quality output is rewarded, which keeps staff morale high.

- Dr. S. K. Shrestha, Lumbini Eye Hospital, Nepal

c. Human resources and sustainability

Any strategy that keeps well-trained personnel within the organisation and motivated to contribute to the vision of the organisation will help to ensure the sustainability of the eye care programme. Employees represent a large investment and cost, and like any major investment must be treated with care.

- Job descriptions

In a hospital, salaries constitute the major expenditure, varying from 30% to 60% of total costs. Clear "job descriptions" help employees to understand their role clearly, making them more likely to become more accountable for their output. Supervision and monitoring of staff can also become more objective.

- Regular and seasonal workload versus manpower planning

Eye hospitals often experience wide seasonal variations in the patient load. In North India, hospitals have very few patients during the summer months. There are ways to reduce such variations but in situations where such methods can't be applied, more attention must be paid to the human resource costs. In most settings, laying off staff during lean periods is not an option. However the following activities can be scheduled during the lean periods:

- Annual vacations for the staff
- Training activities- in-house or outside
- Major maintenance activities
- Engage the staff to produce some of the supplies for the hospital

- Recruitment and selection

All health care activities are labour intensive, so while recruiting any cadre of staff, adequate care should be taken to ensure that staff have the right skills and attitude and a pleasant disposition. Now in an era of patient-centred care, the institution should ensure that the staff recruited are more service-oriented than "business-like." These factors help in enhancing patient satisfaction and create better acceptance of the eye care programme in the community. Advertise for and hire employees who share the organisation's ethical principles and who are willing to dedicate their work lives to the organisation's vision. Attracting like-minded people to work for the organisation will help its survival in the long run.

Certain jobs within a hospital don't offer many opportunities for career growth or advancement and yet these positions must also be staffed. At the time of selection for such positions this must be kept in mind while judging each applicant's aptitude.

- Employee recognition and retention

Employees must be acknowledged for their contribution to the organisation's success in providing high quality, large volume cataract surgery. This recognition can be formal or informal, such as a raise in salary (based on years worked), a bonus or benefit plan, an opportunity to attend a conference, a certificate or special event honouring dedication, a word or note of thanks, time off during a slack period in lieu of overtime worked, flowers or small gifts for the department, a smile in the hallway and respect on a day-to-day basis. Because an organisation invests a lot of time and money in recruitment, selection and training of employees, it is vital to recognise and reward hard-working staff in order to retain them. The direct and indirect costs of replacing a good employee are extremely high.

4. Building and infrastructure (see Architectural Design Module)

	a. High quality	b. Large volume	c. Sustainability
Building and Infra-structure	• Layout • Maintenance • Sanitation & hygiene	• Capacity • Accessibility • Working days and time • Operating theatre layout & work flow • Erogonomics	• Appropriate building technology & materials • Flexible & functional building design • Durability & ease of maintenance • Design using natural resources

Introduction

An eye care programme's physical facility, whether the building itself or the infrastructure, has a big influence both on the productivity and quality. Hence at the planning stage the facility must be designed to ensure high quality, large volume and sustainability. Where necessary, renovation can be planned to ensure this.

4. a. Infrastructure and high quality

Factors that contribute to the offering of high quality cataract surgery are appropriate layout of the building, proper maintenance of it, and ensuring sanitation and hygiene.

We started the Tirunelveli satellite hospital with a lot of hope and experience. The physical design was an improvement over our Madurai facility. We have integrated the paying and free hospitals for economies of scale. The wards and patient examination rooms in the free section are far more spacious than at Madurai. Moreover, in order to better utilise operating room capacity, we have a central surgical facility which the free and paying sections of the hospital jointly utilise.

- Dr. R. D. Ravindran, Aravind Eye Hospital

- Layout

A poor architectural layout makes it difficult to maintain high quality. For example, poor layout of diagnostic facilities discourages the ophthalmologist from using them on a regular basis, which in turn can affect the quality of clinical work. Also, it is not uncommon to see operating rooms that open directly into general patient waiting areas, or common corridors that are built across from toilet facilities. In such instances it is very difficult to maintain high standards of asepsis inside the theatre.

While planning the layout for an operation theatre, it is ideal that there be adequate barriers to infection. In hospitals where a large number of surgeries are done every day, it is desirable to have a separate entrance and exit, so that the preoperative cases are brought through one door and the patients leave the theatre after surgery through another door. This will help in maintaining asepsis and creating a smooth flow of patients.

The outpatient layout must reflect the clinical protocol of how a patient is examined. In some hospitals, the patient moves from station to station and in such cases, the positioning of stations should reflect the patient flow and avoid cross traffic. Another model is one in which the patient stays in a fully equipped examination room and the different clinical staff come in to examine the patient. This works well in conjunction with a well-managed appointment system. In

both models adequate waiting space will need to be provided both for the patients and their attendants.

While planning for the layout and facilities, taking the average patient load will lead to inadequate space on several occasions leading to patient dissatisfaction. The facility size should be based on expected average of the peak patient load.

In addition to the high quality of treatment we offer, we are also trying to bring spiritual practice into our work....We have a meditation room, and though no one is compelled to go there, the room is visited by staff members and patients alike. The meditation room, and the desire of Aravind's senior staff members for divine guidance, have created an atmosphere of spiritual influence in the hospital. The senior nursing staff appreciates the atmosphere of serenity and quiet efficiency, and sets an example for the junior staff.
- Dr. G. Venkataswamy

- Maintenance

The building and the different areas within it should be designed for easy maintenance. This will ensure that fixtures and equipment are always available and functioning properly. While choosing building materials, the ease of maintenance should also be considered.

Carrying out daily maintenance rounds using a checklist and establishing a schedule for routine maintenance (of generators, air conditioners, elevators, water pumps, etc.) will go a long way in ensuring that the facility functions well, thereby contributing to increasing patient comfort and satisfaction.

- Sanitation and Hygiene

Any design feature in the building that encourages good sanitary and hygienic practices will contribute to high quality, especially by keeping infection rates low. Most hospitals tend to neglect the housekeeping function, which is often given as an additional responsibility to the head nurse. Since the head nurse's training and primary responsibility is nursing, the housekeeping function gets minimal attention in this structure. Housekeeping is a key function in hotels and it must be recognised that it is even more important in hospitals. It is best to assign this responsibility to a non-clinical person who will be required to supervise the sanitorial staff and ensure that high standards of sanitation and hygiene are maintained.

4. b. Infrastructure and large volume

Different areas and departments of the facility can be designed and equipped to promote productivity.

- Capacity

The outpatient areas, diagnostic facilities, number of beds and operation theatres available for ophthalmic work will determine the capacity or the volume of work that can be done. For optimum utilisation, the various components of the infrastructure will need to have the right mix and right quantity. There must

be a match between the number of beds and operation theatre capacity, for example. There should also be a balance between case load, number of operating tables and the surgical instrument sets available. Factors like inpatient length of stay, throughput of surgeries per hour, and the proportion of admissions to outpatients drive such a balance. Without the right mix and quantity, one or more resources will be under-utilised.

- Accessibility

It must be recognised that eye care by nature is secondary or tertiary level service, hence it requires a considerable service population to make it viable. A viable minimum service population would be 500,000 while a more desirable size would be 1 million. where primary eye care is necessary, it would be most effective to integrate it with primary health care systems. Thus, the eye care facility must be located in a place with easy access from all parts of its service area.

In several instances, eye hospitals promoted by voluntary agencies are situated in remote rural areas that often have poor access, resulting in a small patient load and gross under-utilisation of the facility. Since it may not be viable to relocate the hospital, in such instances investment must be made to create the ascess by providing transport service from the nearest access point. It can be counterproductive to locate eye hospitals in remote rural areas to serve the "remote rural poor" since they are likely to have very limited access, making them very difficult to sustain from an economic and staffing perspective.

Within the hospital the design must allow access to people with disabilities of all kinds. For example, elevators or ramps with handrails make it easy for the elderly, disabled and poorly sighted to reach different floors.

- Working Days and Times

The volume of patients treated will also depend on the number of hours in a day the facility is open to patients, as well as the number of days per week and the number of hours the surgical facilities are available. Larger facilities with longer working hours and daily surgeries can certainly handle larger volumes of patients than facilities that are open to patient registration only two hours a day or operate on only two days a week.

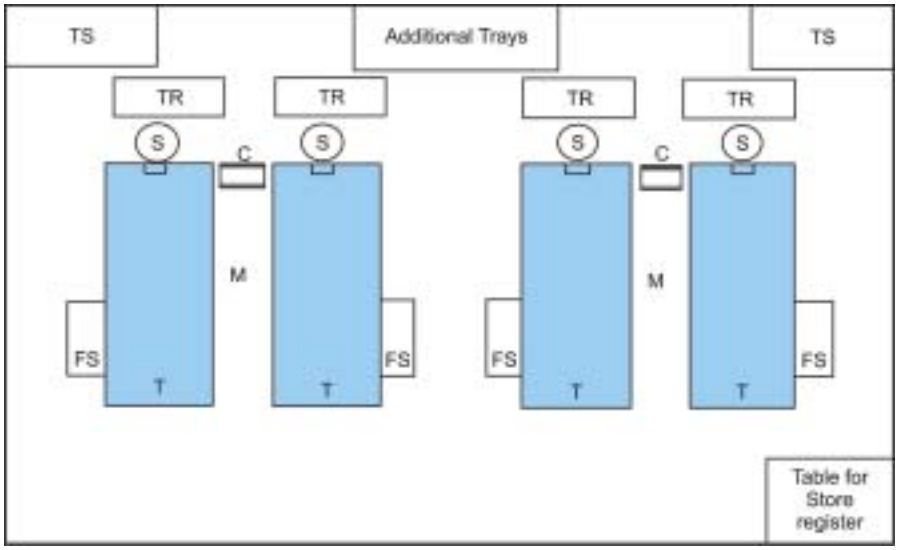
Operating theatre layout and workflow

The operating theatre (OT) layout and the workflow in it have maximum bearing on the efficiency of a programme in terms of number of surgeries done. The OT layout could have two tables with a floor model operating microscope in between them (see illustration below). While the surgeon is operating on one table, the second assisting nurse can prepare the patient on the next table. The surgeon, on finishing the surgery, simply swings the arm of the microscope over to the next table and starts the next surgery after complying with asepsis protocol for steps in between surgeries. This process significantly increases the throughput of surgeries per hour in the OT.

Variations of this model are in practice elsewhere. In a practice in Germany, inside the OT there is only one table on wheels with three other such tables with patients on them in an adjoining preparation room. When the surgery is done, the patient i wheeled out and another patient is wheeled in within minutes. In many centres the US, a surgeon has two or three operating rooms. After doing surgery in one room the surgeon moves into the next where the patient has been prepared and is ready for surgery.

Such variations are often a reflection of local regulations but the basic underlying principle is the same-cutting down on the surgeons' waiting time betwen surgeries. Though these variations call for different levels of investment, they all seem to result in the same quality of visual outcome and level of safety for the patient.

Operation theatre layout



TS - Tables for sharps in trays
TR - Tray
M - Microscope
FS - Foot stool
T - Operating table
S - Surgeons stool
C - Cautery

- Ergonomics

Proper placement of equipment for ease of use will assist staff to treat more patients in less time. For example, at Aravind Eye Hospitals, surgeons set themselves up comfortably in the operation theatre before beginning their shift. Then they simply swing the operating microscope to the second table and swivel their stools to start a new surgery. Similarly for outpatient work, workstations have been designed taking into account the ergonomics and workflow. If such workstations prove to be expensive, the same functionality can be achieved by proper placing of the equipment. However, the building design in terms of room sizes must allow for such arrangements in the operating rooms or outpatient areas.

4. c. Infrastructure and sustainability

Developing and maintaining the infrastructure and making new additions depend directly on the availability of financial resources. It is important to remember that buildings can be borrowed, rented, purchased, built or renovated. Since building is one of the largest capital expenditures, it makes sense to facilitate financial sustainability of the programme by wisely and carefully investing in infrastructure. Developing and maintaining a building that is attractive for patients and where they feel comfortable and at home will assist sustainablity of the programme. However excessive investment on the aesthetics could undermine financial viability, especially if the investment is made with borrowed funds.

Control of blindness is now a global effort, and the International Lions Foundation agreed to raise one hundred and forty million dollars, and as one of their early projects they financed our Lions Aravind Institute for Community Ophthalmology. The American Academy of Ophthalmology is also committed to supporting the global effort. So things do happen, slowly and steadily. There are higher forces at work in these situations, and the global solutions to blindness are beginning to take shape. In 1984, when we wanted to build another hospital one hundred miles south of Aravind, we were told it would cost about one million dollars. We discovered that we could raise it on our own through services to paying patients, and so we did. I had no plans at all in the beginning for how this was going to come about, but things evolve, consciousness evolves, and that gives me moral support. Recently we expanded our old building, and all the money has come from our own earnings from patients who can afford to pay according to their capacity. We generate money from paying patients, use it optimally, and we are able to take care of a large volume of poor patients, build good buildings and bring our services up to an international standard.
- Dr. G. Venkataswamy

- Appropriate and economical building technology and materials

Local building materials are probably better suited to the local climate and weather than imported materials. Local building materials are probably much cheaper than imported materials, as well. Trying to emulate or copy a facility from a different country or climate could lead to extra initial cost, increased maintenance costs, and some surprises in the future.

- Flexible building design

Design the building with future renovation or expansion in mind. As your cataract surgery programme grows, you might want your building to grow too. Planning this from the start will keep future costs down.Often it is the outpatient services and operating rooms that need to expand. It must be recognised that making renovations in a working hospital is extremely disruptive and could turn out to be very expensive on account of loss in productivity and discomfort to patients.

- Durability and maintenance

Use design features that are easy to maintain, and building materials that are durable despite repeated cleanings. While choosing the building materials, whether it is the flooring or the doors/windows, in addition to the initial cost, their durability and ease of maintenance should also be considered.

- Design using natural resources

Using natural resources such as solar energy, natural lighting and flow-through ventilation makes the building more comfortable for patients and staff, and decreases the cost of utilities such as electricity for lighting, heating or air conditioning.

In 1980 my friend, Dr. Charles Schepens, came from Boston and laid the foundation for a main building. I still did not have the money; the bank said that I was not credit worthy. So I had to mortgage my house and borrow 500,000 rupees to begin construction. The family construction company built the ground floor. One-third of the admissions were paying patients. With the revenues from the paying patients we could finish building the place, buy the equipment, and take care of the other two-thirds of the patients for free.

- Dr. G. Venkataswamy

5. Instruments, equipment and supplies

	a. High quality	b. Large volume	c. Sustainability
Instruments, Equipment and Supplies	• Good quality products, available when re quired, purchased from reliable vendors • Calibration	• Good maintenance • Spare parts planning • Number and balance	• Group purchasing • Inventory management • Models easy to repair and service • Appropriate technology

Introduction

High quality, large volume clinical work can be done when good quality diagnostic equipment, surgical instruments, clinical and administrative supplies are available in the required quantities at the required times.

The following five steps can be applied to improve utilisation of instruments, equipment and supplies:
Step 1: Review the stock of instruments, equipment and supplies:
Take an inventory of all instruments, equipment and supplies. How many surgical instrument sets, beds, other items of equipment, medications, etc.?

Step 2: Ensure a balance between the various resources:
Balancing resources can maximise productivity. Furnish enough instruments, equipment and supplies to keep the flow of patients moving. Provide spares and extras. One broken piece of equipment, unsterilised instrument or missing supply could lead to delays, frustrations, maybe even shortcuts that might threaten clinical quality.

Step 3: Ensure proper utilisation of resources:
Beds being used longer than necessary by the patients, vehicles being used for personal purposes, equipment lying idle for want of spare parts are all examples of either mis-utilisation or under-utilisation. If the programme objectives are to be achieved, it is necessary to establish information systems and control mechanisms to ensure good utilisation of the resources.

Step 4: Periodically review the quality of resources:
The resources must match the programme requirements in terms of both quality and quantity. As an example, a vehicle that has served its time and constantly breaks down is both expensive to maintain and becomes unreliable to use in the programme. A periodic check on the quality and performance will help in initiating replacement actions in time and ensure that the programme does not suffer.

Step 5: Spares planning:
Plan for adequate spare parts and extras, taking into account the lead-time and consumption or usage rate. When it comes to surgical instruments, it must be recognised that some instruments may last a lifetime (like a spectrum) while others may last at best for a few hundred surgeries (corneal scissors or fine toothed forceps). So plan for spares rather than keeping complete extra sets, and plan at "item level" based on usage.

Step 6: Enrol the community to provide resources:
Resources are sometimes required for a short term or on a temporary basis. This is especially true for outreach activities. Such resources include basic furniture, water supply at the outreach site, and publicity. All these can be requested from the community. This not only reduces the cost to the programme but, more importantly, greatly strengthens the programme through community participation.
From R. D. Thulasiraj and Dr. Allen Foster

5. a. Equipment and high quality

Good artists and craftspeople use good tools and take care of them properly. Using poor - or poorly maintained - instruments, equipment and supplies in an eye hospital will not lead to high quality cataract surgery. Since quality is the number one concern, it makes sense to ensure that good quality instruments, equipment and supplies are purchased and used.

- Good quality products, available when required, purchased from reliable vendors

Purchase instruments, equipment and supplies from reliable sources with good reputations. Select brands known for good consistent quality and vendors known for good service. Selecting tested brands of pharmaceuticals and vendors who are reliable ensures that there are no compromises to quality resulting from substandard supplies or nonßavailability of supplies. Choose suppliers known for their integrity. Initial costs may be higher for good quality products, but they usually cause fewer problems, costing less to maintain over their lifetime than poor quality products.

- Calibration

Regular calibration of diagnostic equipment leads to better reliability of the measurements and this in turn contributes to better quality in diagnosis and treatment.

4. b. Equipment and large volume

Delays can be disastrous for productivity and large volume. Smooth, uninterrupted flow will help staff do their jobs calmly and properly, without rushing (also leading to high quality), and will enable patients to receive their treatment in a calm, professional setting (leading to their recommendation of the facility to others).

- Good maintenance (see Appendix 2)

Periodic regular maintenance and immediate breakdown maintenance will ensure maximum uptime (time during which a piece of equipment is functioning), which helps keep large volumes of patients flowing smoothly. Maintenance should also keep track of warranties, which can save money on maintenance and repairs.

- Spare parts planning

Spare parts planning is important for maximum uptime of equipment. It is necessary to keep spare parts in stock, and to reorder them whenever necessary. An inventory system, whether manual or computerised, is vital. The planning should reflect lead-time and consumption at component level.

- Number and balance

The number and balance (or combination) of operating tables, operating microscopes, and surgical instrument sets will determine the volume of surgeries that can be performed in one day. These items should be available in the required quantities, and when required. Aravind's formula for balancing resources has been shown to facilitate large volumes of cataract surgeries per day:

Ophthalmologist	Operating Tables	Instrument Sets	Operating Microscope	Surgeries per hr
1	1	1	1	1 - 2
1	1	3	1	3
1	2	6	1	6
1 + 1 Resident	3	8	2	8 - 10

This process of finely balancing the inputs essentially reduces the time wasted by the surgeons or nurses waiting for instruments or equipment. The same principle can be applied to other situations also.

5. c. Equipment and sustainability

Although keeping costs low can contribute to the financial viability of a programme, cost cannot be the only consideration in purchase decisions. Other factors to consider are quality, performance, reliability of supply, after-sales service, etc.

- Group purchasing

Pooling the requirements of several organisations can help in negotiating better prices and can also significantly reduce the cost of purchasing. The group-purchasing organisation can regularly do quality audits to ensure good quality purchases. It can also invest in high calibre personnel for materials management, which may not be possible for each individual hospital to do. This would however require a high level of coordination and cooperation from participating hospitals with respect to payments and lifting committed quantities.

- Inventory management

Effective inventory management means not spending money on equipment that will sit for long periods of time in closets. It means knowing when supplies will run out, and when instruments are expected to wear out. Inventory control is another facet of planning, which is necessary for the long-term survival of a cataract surgery programme.

- Choosing models easy to service and repair

Second-hand and refurbished or reconditioned equipment might save money. But this is only true if the equipment is easy for staff or local trades people to service and repair. When there is an option, purchasing a domestic product from a local service centre will probably make more sense than purchasing or even getting a donation from another country.

- Appropriate technology

What role do newer technologies play in sustainable cataract surgery programmes? How do you decide if a new technology is appropriate for your programme? Each decision will need to be evaluated individually, always keeping in mind that the programme's goal is to provide the most appropriate services for the community as a whole by striking a balance between what is best for individual patients or staff members and what will benefit the whole community.

Modern technology combined with spiritual consciousness is the need of the day," Dr. Venkataswamy has said, and many who visit Aravind remark on the sanctity of its operating rooms.

- Ronald F. Thiemann

This is not to say that all new technology is inappropriate. There are several technology options for both the administrative and clinical functions. Computerisation, for example, could lead to better efficiency and cost reductions thus would be better than manual information systems in settings where computers can be serviced easily. Phacoemulsification may be appropriate in settings where patients have paying capacity and seek cataract surgery at an early stage and want to return to work immediately. YAG laser versus needle capsulotomies, viscoelastics versus air in cataract surgery, and cleaning machines versus manual sweeping and mopping are other examples of technology options.There are also quality implications and each division will have to be made on a case-by-case basis giving due consideration to all factors.

New technologies cost money. Patient load and rate of returns should also be taken into account in the purchase decisions. For a hospital doing very few ECCE-IOL surgeries, it would be more cost effective to refer a patient to another centre (if that is an option) than to own a YAG laser. The same reasoning should apply to investments for general anaesthesia or retinal services. It would also be prudent to have appropriate skill development and training precede investment in new technologies.

Community needs on one hand and patient satisfaction on the other should drive the selection of appropriate technology. For long-term sustainability, it is extremely important to have this sort of perspective in focus.

The intraocular lens (IOL) is a good example of a technology more appropriate than aphakic spectacles under most circumstances; it is of lower cost to the patient or the programme in the long run and increases patient satisfaction.

a. Cost

Cataract extraction with posterior chamber IOL is the standard surgical procedure in all developed countries. However, in developing countries the investment in operating microscopes and additional equipment, the high cost of IOLs, and the relatively small number of ophthalmologists skilled in this procedure have resulted in high prices for IOL surgery, hence it is a minority of patients who benefit from this new technology. The cost of IOLs prevents governments and charitable organisations from making IOL surgery available for free. The additional cost of the IOL reduces the scope of community eye care services to those who can afford them. This is a dilemma that most developing countries have been discussing for the past several years. A solution lies in making IOL surgery available at a cost that is affordable to the patient. (See Financial Sustainability Module.)

IOLs have revolutionised eye care delivery, especially to poor people in developing countries. Now, instead of going blind, people come when cataracts begin to interfere with their vision. They are able to pay for the IOL and get back to work within a week after surgery.

- Dr. G. Venkataswamy

With modern mass communications like television, awareness about IOLs is quite high, even among the poor and rural patients. They seem to be aware of the better quality of vision provided by IOLs. They are therefore willing to pay a reasonable amount. Motivating them to come for early surgery, when they are still economically productive, makes it possible for them to pay a modest amount towards the surgery. Here pricing becomes a critical factor influencing demand and keeping the costs low. Such pricing becomes the challenge for ensuring financial viability.

b. Patient satisfaction

The alternative to IOL surgery — ICCE/ECCE with aphakic spectacles — is not particularly attractive from the patient perspective. As a result, the patients with only this option prefer to wait until their vision becomes 3/60 (20/400) or less. It seems that a positive trade-off for cataract surgery with aphakic glasses is felt only when vision drops to this level of blindness. By this time the patients have stopped being economically productive and are often dependent on their children, even for basic needs like food, clothing and shelter. Ophthalmologists themselves are reluctant to advise patients with vision better than 3/60 (20/400) to undergo the traditional cataract surgery with aphakic glasses. Due to the inherent limitations of aphakic glasses, patients with better preoperative vision (>3/60) would be quite unhappy. In contrast, the quality of vision with IOL seems to encourage patients to come for early surgery. In the United States, the number of annual cataract surgeries shot up from about 500,000 to more than 1,500,000 after IOL implant became the standard surgical procedure. In India as well, paying patients come early for the much better level of vision given by cataract extraction with IOL implant. Hence, IOL seems to provide an opportunity for early cataract surgery, when the person is still economically productive.

At Aravind Eye Hospital, IOL surgery was started in about 1985. When IOLs were still imported, it was offered to poor patients at Rs. 1,200. Later when the import prices dropped, the price was reduced to Rs. 800. While about 90% of the paying patients switched over to IOL during this period, very few free patients made the switch. Aurolab was established in 1992, which made IOLs available at low cost (Rs. 250). The price to the free patients was dropped to Rs. 500 and this also included discharge medication. Supplemented by active health education, the IOL acceptance in the free hospital has now increased to almost 100%. The same patients who had to be motivated with free food and transportation to undergo the traditional ICCE surgery are now willing to pay Rs. 500 for the new procedure with IOL, recognising the superior visual outcome that it produces.

6. Policies, systems and procedures

	a. High quality	b. Large volume	c. Sustainability
Systems and Procedures	• Standardisation • Patient-centred systems • Quality assurance systems • Review Meetings • MIS • Medical records	• Flow of patients, work, money supplies • Resource utilisation • Micro-level planning	• Clinical effectiveness • Periodic review to eliminate redundant systems • Comprehensive information systems • Patient friendly systems

The whole purpose of systems and structures is to help normal people who behave in normal ways to complete routine jobs successfully, day after day. It's not exciting or glamorous. But that's management.

- John P. Kotter

Introduction

A vital role of management is to set up policies, systems and procedures that translate the vision and mission into action while also ensuring that high quality and large volumes are maintained in a sustainable way. These relate to all aspects of the eye care programme: demand generation and outreach activities, human resources (clinical and non-clinical), infrastructure, and instruments, equipment and supplies. Furthermore, policies, systems and procedures will need to be constantly reviewed and monitored to ensure that they lead to the effective use of all of these resources.

The policies, systems and procedures (or lack of them) that govern clinical and administrative aspects of the eye care programme can affect quality outcomes, productivity and costs significantly. For instance, consider a hospital that doesn't believe in a medical record system. Here, every patient visit will need to be handled as a new visit involving detailed workup, slowing productivity, costing more, yet providing suboptimal care for want of accurate disease history.

The systems must be designed to optimise the balance between resources and to match them to patient load. Systems or practices that increase efficiency must be introduced. Similarly systems or clinical procedures that don't contribute to clinical outcome, patient satisfaction or efficiency are wasteful and hence must be dropped or modified. Processes must be in place to involve the staff in decision making as a way of keeping up their motivation and working as a team. Systems must be in place to carry out planning for the next day, the next month and the next year.

6. a. Management systems and high quality

Policies, systems and procedures that increase productivity or lower costs but threaten clinical quality or patient satisfaction will not be sustainable over the long term. High quality must always be the first concern. The following policies, systems and procedures help to ensure high quality cataract surgery and patient care.

Standardisation of procedures and stages aids in reducing unnecessary waiting time during diagnosis, and helps to avoid incompletion of treatment and improper handling and zig zagging of patients. By adopting the systematic flow of patients, 1500 patients can be easily screened and treated in a day (8 am to 2 pm) with a medical team consisting of 5 doctors and 12 paramedical staff. This system can be implemented both in outreach camps and base hospitals to ensure optimum utilisation of the medical staff.

- R. Meenakshi Sundaram, Aravind Outreach Coordinator

- Standardisation

Eye care, being a curative service with large volume procedures like cataract surgery or refraction, can easily lend itself to standardisation. Cataract extraction and the prescription of glasses offer many opportunities for standardising the clinical protocols, for both outpatient and surgical procedures. Standardisation ensures high quality while leading to greater efficiency and lower costs. All the employees know what to expect and what to do, because a set procedure is followed.

For instance, if each of the two surgeons in a facility does cataract surgery using different techniques, it would mean more instruments, more coordination to ensure that the right instruments are ready for the surgeons, and more learning for the paramedical staff, who will need to learn and become familiar with two procedures. Standardisation means that several identical sets of instruments can be purchased and used, and that paramedical staff need only be trained to assist with one technique.

Standardisation is not to be confused with a process of no improvement or inflexibility. It only means that at any given time, all clinical personnel perform their activities following a standard procedure. This should also extend to the medications prescribed during the preoperative and postoperative periods. Standardisation makes it possible to easily compare outcomes with processes, which can then lead to improvements. In fact, having a standard procedure makes it easier and quicker to make quality improvements and changes as required.

The process of standardisation is not very easy, as there are ego involvements and attachment to a certain way of doing things, and it often requires unlearning and relearning. However, standardising as many procedures as possible is another step toward quality improvement, productivity, cost reduction, and sustainability.

- Patient-centred systems

We realised that patients like personalised care and want their doctor to talk a lot with them. Here at Theni we try to foster this relationship. At the same time, since we must do a good number of surgeries and see a lot of outpatients, we cannot spend a considerable length of time with each patient. So we judiciously mix both institutional practices and private clinic atmosphere whereby I do "just the right amount" of talking and leave the rest to be taken care of by other staff. By this we tend to increase patient satisfaction.

- Dr. Datta, Aravind Eye Hospital, Theni

In addition to working towards high clinical quality, it is also necessary for the hospital to strive for high patient satisfaction. This is possible when administrative and other systems and procedures are geared toward the needs and comforts of the patients and redesigned as patient-centred systems or procedures. More often than not, systems and procedures are designed to benefit the organisation by way of better control or lesser use of resources. While this is necessary from an efficiency perspective, it should not be at the cost of creating hardships for the patients.

- Quality Assurance Systems (see Appendix 3)

While streamlining and improving the efficiency of each clinical procedure in its implementation, the clinical effectiveness of these procedures has to be evaluated as well. Each time a clinical procedure is carried out, it should add to the quality of diagnosis or outcome, patient safety or patient comfort. Those that don't fit this criterion should be dispensed with. For example, preoperative work-up requiring X-Ray or ECG routinely for all cataract patients doesn't add to quality or outcome. Formal quality assurance systems can be put in place to

monitor clinical parameters such as intraoperative complications and clinical outcomes as well as patient satisfaction.

An emphasis on quality control, at all levels, is a major contributing factor in our success. We closely monitor the needs of all patients. Since patients must interact with all levels of staff, the staff is constantly expected to be polite and give accurate information. There is continuous feedback from the patients regarding their views, whether it be their outpatient or inpatient care. There is a management team, consisting of departmental administrative heads (e.g., housekeeping and maintenance). The administrator heads a team meeting weekly, reviewing suggestions and the functioning of the institution at various levels. All applicable suggestions are implemented, improving the services offered to the patient. Constant monitoring of the staff's performance is essential.
- Dr. G. Natchiar, Aravind Eye Hospital

- Review meetings

Regular analysis and review of the quality assurance data, suggestion book, results of patient satisfaction surveys helps to ensure continuous improvement, which leads to high quality. The staff who interact with the patients are also a rich source of information for improving patient satisfaction.

- Management information system (MIS) (see Appendix 4)

While the best policies, systems and procedures may be in place, there must be an information system to constantly monitor and evaluate them, and to see whether they are performing as they should or need revising/updating. A good management information system with regular review meetings will help in maintaining high quality. The MIS will also help in the analysis and understanding of key issues relevant to programme planning and decision-making and problem solving.

- Medical records (see Appendix 4)

Medical records are documents that allow clear, concise exchange of pertinent information among all staff involved in patients' care. Procedures must be in place to ensure a medical record system that is complete, properly stored and secure. A good medical record system provides continuity in care and also serves as a linking process for the activities of various clinical personnel. In hospitals employing several doctors, very often the doctor who examines a patient the first time may not be available during the follow-up visit. Without the medical record, either a complete diagnostic workup will have to be repeated at considerable cost and time, or not doing it could result in poorer quality of clinical work. An investment in setting up a medical records section where both outpatient and inpatient records are stored is essential for improving and maintaining a desired level of clinical quality.

6. b. Management systems and large volume

Systems and procedures have a strong impact on productivity. Poorly developed policies, systems and procedures can easily hamper productivity, efficiency and large volume.

For instance, there are hospitals in India where as a policy, surgery is done once a week or on alternate days. It is easy to see how this can add to the length of hospital stay and reduce bed utilisation, due to longer preoperative stays. The result is that fewer patients can receive surgery.

- Flow

To ensure smooth service for large volumes of patients, systems and procedures must be put in place that ensure effective and efficient flow. Expected flows should be set out and then actual flows recorded. These can be analysed at review meetings in order to ensure continuous improvement.

a. Patient flow
b. Work flow
c. Money flow
d. Flow of supplies

- Resource utilisation

It is important to analyse how resources are expected to be used, how they are actually used, and how they could be better used. Some cost-cutting measures, for example, can lead to inefficient use of staff time. A management information system can be used to keep track of costs and benefits of different choices and decisions about resources.

- Micro-level planning

In addition to long range or annual planning it is essential to plan for the next day and ensure that all resources are organised and all concerned staff are informed. The availability of staff, patient load and requirement of supplies are known before the surgical session and in most cases this can be ascertained with a high level of reliability the previous day. This information must be used to plan for all the inputs required-human resources and supplies. The following form with suitable modifications and more rows as required could help in such planning.

O.T human resource and supplies planner

6. c. Management systems and sustainability

Any aspect of an eye care programme that wastes, or leads to low quality and inefficiency, or inconveniences the patients, or discourages innovation and eventually affect the programme's sustainability. Policies, systems and procedures must be sustainable, too.

- Clinical effectiveness

Attention must be given to ensure that each time a procedure is done, it contributes to clinical effectiveness, in either the diagnostic or the treatment process. All clinical procedures and the way they are done must be periodically reviewed, to assess their current relevance. Procedures that don't contribute to the diagnosis or outcome tend to waste resources, consume more time and increase the cost per case.

For instance, one could streamline the refraction process ensuring that the time taken is minimum and is extremely efficient. However, if the patient is refracted more times than necessary because of poor medical records, poor quality of refraction or repeat orders by the ophthalmologist, then the cost per patient goes up in spite of the fact the cost of each individual refraction is kept to the minimum. Performing a complete refraction at the time of discharge, when a pinhole vision assessment is sufficient, is another instance. Similarly, if we believe that a trained ophthalmic assistant can perform a refraction as well as an ophthalmologist can, then an ophthalmologist doing a refraction would result in higher costs but not add value to the clinical outcome.

- Periodic review to eliminate redundant administrative systems

It has always been a process of following the heart....Our capacity to follow our hearts and instincts has more often than not helped us to do the "right thing"....A lot has to do with being alert, being in touch with the outside, sorting through opportunities, and acting on those that hold the most promise....most of the juice comes from the creativity and responsiveness of committed people.

- R. D. Thulasiraj

As with clinical effectiveness, administrative and managerial effectiveness must be periodically reviewed. Doing things because they have always been done that way stifles innovation and change. In an extremely dynamic environment, as we are in now, innovation and change are vital for remaining financially viable.

- Comprehensive information systems

The information systems must be designed to provide timely information to improve day-to-day operations, planning and decision-making. Exceptions or deviations must be reported as they occur or at least on a daily basis so that the causes can be ascertained and corrective actions can be taken. For this to happen, it is necessary that the record keeping be done without any delay. In hospitals where computers are available, this can be achieved by making the entire administrative process online.

- Patient-friendly systems

Many eye care facilities make their systems and procedures work for the hospital or staff, forgetting that cataract patients often have difficulty seeing and getting around. Making the visit to the eye care facility easy, convenient and unthreatening will encourage patients to return for follow-up and recommend it to others, leading to larger volumes. Successful, long-lasting eye care programmes are those that put the patient at the centre of all their thinking and planning.

Appendices

Appendix-1

Benchmarks for Monitoring Quality, Volume and Sustainability in Cataract Surgery Programmes

Quality of cataract surgery outcomes is becoming a concern, especially in view of the recently done cataract outcome surveys in India, China and Nepal, which showed that 20% to 50% of those operated were still found to be blind (presenting vision < 6/60 in the operated eye). Satisfactory visual outcomes and meeting patient expectations are fundamental to increasing the uptake for eye care services, but desired outcomes have not been adequately articulated. Such standards will need to be established for vision outcomes, complications, productivity and general service standards. It is important that each hospital establish such standards in order to measure their own performance. In 1998, for the first time, World Health Organization recommended standards for visual outcomes following cataract surgery.

Suggested benchmarks for clinical quality and surgical outcomes

1. All cataract surgeries should be done with an IOL implant.
2. ECCE with IOL (custom axial lengths) and sutures should have at least 40% of the patients with 6/12 or better, uncorrected postoperative visual acuity at discharge.
3. ECCE with IOL (custom axial lengths) and no sutures (superior incisions) should have 70% of patients 6/12 or better, uncorrected postoperative visual acuity at discharge.
4. Vitreous loss in ECCE by expression should be less than 3%.
5. WHO has set the following as the standards for visual outcomes with available and best correction at the first follow-up visit (4-12 weeks following surgery):

Postoperative Visual acuity		Available correction*	Best correction**
Good	6/6 - 6/18	80% +	90% +
Borderline	< 6/18 - 6/60	15% -	5% -
Poor	< 6/60	5% -	5% -

(Source: WHO/PBL/98.68)

* available correction = whatever spectacles the patient is wearing or without spectacles if not wearing any

** best corrected = full refraction

Benchmarks for volume, productivity, cost and service standards

1. 6-20 IOL surgeries/day/ophthalmologist in a large volume setting. The Government of India has set a norm of 750 surgeries per ophthalmologist

per year in the government setting, but more desirable is a number between 1000 - 1500 surgeries per ophthalmologist per year.

2. 80 - 100 surgeries/bed/year
3. 100% cost recovery. Ideally, after covering all the costs of operating the eye care facility, there should be 20%+ of income left for replacements and expansion.
4. Charges should approximate each patient's one-month income.
5. Services should also be provided for the poorest population, underserved populations and women. At least 50% of cataract operations should be done on women to equally serve women and men.
6. Services should be available with 100% reliability as per the announced hours of operation of the institution.
7. All those who come during the working hours should be seen within 2-3 hours of their arrival and those who need hospitalised surgery or treatment should receive the same within 24 hours of their arrival at the eye care facility.

Appendix - 2
Setting Optimum Targets

	20 bed hospital	50 bed hospital	100 bed hospital
No. of ophthalmologists	2	3-4	6-8
No. of surgeries per year	1500-2000	4000-5000	8000-10000
No. of cataract surgeries (mostly IOL)	1200-1500	3000-4000	6000-8000
No. of surgeries per bed	75	75-80	80-100

Vision Building *

	Before Vision Building			After Vision Building			Variance		
	20	50	100	20	50	100	20 (%)	50 (%)	100 (%)
No. of ophthalmologists	4	3	4	4	3	4			
No. of IOL cataract surgeries	356	3249	377	1104	4297	3786	210	32	904
No. of cataract surgeries	277	669	189	823	1301	3499	197	95	1751
No. of surgeries per ophthalmologist	89	1083	94	276	1433	947		32	904
No. of surgeries per bed	18	96	4	55	126	38	210	32	904
Cost per cataract	1921	466	NA	1274	502	1317	-33	7	

* Eye Hospitals

Appendix - 3

Case Study - Is the Aravind Model Transportable? The Malawi Eye Care Project

WHO has been monitoring us to see if the Aravind model can work in other developing countries. I remember especially one wonderful, talented young man who came from Sri Lanka. He was a very good surgeon, and at Aravind he realised that he could go back to his country and establish the same kind of organisation. He went home, and in a month's time he secured enough voluntary support to do 500 operations in a week—something which just shook up the country. The same thing is happening in other countries.

—Dr. G. Venkataswamy

Background

Malawi is a small country in southern Africa, bordered by Tanzania to the north, Mozambique to the east and south, and Zambia to the west. As per 1995 statistics, Malawi has a population of 10,346,194. Ninety percent of the population live in rural areas. Based on several surveys conducted in Malawi, the prevalence of blindness (VA in the best eye < 3/60) is estimated to be 1% of the population or about 110,000 blind people, of which 50% (55,000) of the blindness is due to cataract. The other major causes of blindness include glaucoma, trachoma and childhood blindness. As the life expectancy increases, combined with a population growth of 1.9% per annum, the number of blind people is expected to rise.

Tertiary eye care centres at Central Hospital in Lilongwe and at Queen Elizabeth Eye Hospital in Blantyre are the major eye care service providers.

In 1998 both the hospitals together performed 1,814 operations, of which 794 surgeries were cataract. The Lions SightFirst Eye Hospital (LSFEH) is the expanded eye unit of Central Hospital, a separate building housing an eye ward, OPD and OT built with support from Lions International.

There are also 23 district hospitals that have eye clinics and perform operations by mobilising patients from camps. The camps are done periodically, once in every four months at each district. The hospitals are performing at only 30-40% of their capacity, possibly due to problems in needs-based planning, managerial expertise in eye care delivery, and leadership.

International Eye Foundation (IEF), a well-established NGO playing a significant role in eye care, proposed to make the Malawi Eye Care Project financially sustainable through increased productivity, improved quality outcomes and appropriate pricing. In this context, Lions Aravind Institute of Community Ophthalmology (LAICO), a unit of Aravind Eye Hospital in Madurai, India, was identified to provide support and consultation, both clinical and managerial, for orientation and training of the Malawi Eye Care Project team.

Project planning

Thus evolved the Malawi Eye Care Cost Recovery Project, aimed at turning the Lions Sight First Eye Hospital in Lilongwe into an efficient and effective system for offering high quality and large volume eye care services to the community. The short-term goal of the project was to impart necessary clinical and management training to the hospital personnel to improve their efficiency and the number of patients served. The long-term goal is to make this hospital financially self-sustaining through patient revenues and other cost recovery methods, subject to obtaining government approvals.

Three phases of the project

- Fact finding, planning and needs assessment visit to Malawi by LAICO team
- LSFEH team visit to LAICO for gaining exposure to the Aravind model and for training and formulation of strategy, action plans and systems development.
- Follow-up visit by LAICO team to Malawi to help them in the implementation process

Phase One (March 9-20, 1999)

The four-member LAICO team, (consisting of specialists in management, clinical, outreach and information systems) visited Malawi for planning and needs assessment. The main aims of this visit were:

- to establish a relationship with LSFEH staff
- to gain an overall understanding of
  - the hospital and its activities
  - the external environment
  - the community
- to carry out detailed study on clinical and administrative systems, management issues, and outreach activities
- to jointly work out a strategy and action plan for the hospital

Phase Two (April 5 -May 11, 1999

A team consisting of six members from Malawi, including director and ophthalmologist Dr. C and paramedical and outreach staff, visited Aravind Eye Hospital and observed several clinical and non-clinical procedures for high quality and large volume cataract surgeries. The team also attended a Vision Building Workshop at LAICO where they developed strategies and action plans for improving their systems, procedures and other eye care activities.

Phase Three (September 15 - October 23, 1999)

In the final phase, a five-week follow-up visit was made by a six-member team (the same team of specialists plus two OT nurses) from Aravind Eye Hospital and LAICO to help the hospital implement their strategies and action plan developed during the workshop. This was achieved through surgical demonstrations, mobilising patients through outreach endeavours, and establishing systems and procedures to support the above activities.

A total of 500 cataract operations were carried out, of which the LAICO team did 180 and the local team (ophthalmologist and cataract surgeon trainees) performed the remaining. Thirteen camps were conducted during the visit and 385 patients were mobilised for surgery. Patient counselling in the ward and the outpatient department (OPD) was introduced. Subsidised fees of 500 MK (Malawian Kwacha) for IOL surgery were introduced and within two weeks 15 paying patients were admitted. Standardisation of various systems in the OPD, operating theatre, ward and camps was done. An assessment of the surgical training programme was carried out, and monitoring and quality control systems were set in place. Job descriptions were developed for the staff. Information

systems were introduced in OPD, ward, theatre and camps. Systems in inventory management and accounting were introduced in administration. Further training, in the form of demonstrations and lectures, was scheduled and carried out regularly.

Factors contributing to the effectiveness of the project

- This Lions Sight First Eye Hospital had done 449 cataract surgeries in the year 1998, of which 226 were IOL surgeries. During this project 500 cataract surgeries with IOL were performed in a period of five weeks. No additional resources in terms of staff were involved, apart from the LAICO team. The LAICO team played a facilitator role and the local team carried out the work. The local team did about 65% of the surgery. This was achieved mostly due to the process of the project. The needs assessment visit to Malawi helped the LAICO team to gain an understanding of LSFEH and of the eye care situation in Malawi and the visit of the Malawi team to Aravind/LAICO created a chance for them to observe high quality, large volume models. As well, during their stay they worked out detailed action plans for each of the strategies developed during the Vision Building Workshop with the support of the LAICO team members. This was very helpful for the follow-up and implementation visit. Because the Malawi team had become familiar with the Aravind model, during the follow-up visit they easily adopted many of the proposed systems and procedures they had based on the Aravind model.
- The target of mobilising 100 patients a week and performing 30-40 surgeries a day was initially felt to be unachievable. But seeing it happen in the first week impressed the Malawi team and they became very proactive.
- All the activities were carried out during normal working hours. This built confidence among them and eliminated their fear of having to work extra hours.
- Role clarity among the LAICO team members and local team members facilitated implementation of all the scheduled activities during the five-week period.
- Dr. C and other staff were very actively involved. Students were enthusiastic, willing to learn and hard working at the same time. This motivated the LAICO team to work more efficiently.
- An adequate supply of medicines, IOLs and other consumables was planned and organised prior to this final visit and this kept the work flowing.
- IOL surgeries were popularised among the staff and patients. This will be very helpful for moving toward the long term goal of financial self-sufficiency.
- Most of the new systems and procedures put in practice were found to be effective and hence were accepted by the local staff.

Learnings from the Project

- The nursing staff and ophthalmologists functioning independently at times caused conflict. They have begun to build teamwork and to eliminate the parallel working of clinical and paramedical functions. Team work is vital.
- Because the person identified for the role of administrator was absent during the follow-up visit, there was no one to take up this role. Commitment is vital.
- All outreach procedures had to be worked out again because the identified administrator was not available. Although a new person was identified, he was new to the set-up and not familiar with the project. Continuity is vital.
- Some non-cooperation of the staff in certain areas kept the chores from going on, particularly in the absence of the director. Dedication to the vision by all staff is vital.
- The ophthalmic assistant students were not actively involved in the process. Though they were scheduled for camps and shifts in the OPD, ward and theatre, they did not attend because they were preparing for their examinations. Timing is vital.
- Management Information Systems (MIS), such as for monitoring clinical outcomes, had to be developed by LAICO team members because of non-availability of trained computer personnel. The right combination of staff skills is vital.
- Cataract surgeon trainees were posted for preoperative and postoperative work-ups without adequate guidance and supervision. Due to this, patients who could be discharged earlier — as well as those requiring specialised attention — were unnecessarily kept waiting for a long time. At the same time, due to lack of training in case selection, some outreach patients who did not require surgery also ended up being admitted. There was no one to guide these processes. Training is vital.

Recommendations

- There is a need for continuous monitoring of the progress because some staff perceived the large volume of work to be only for five weeks.
- Dr. C was the only person who could take decisions and only if he was available were things happening. There should be a second person identified who can carry out Dr. C's role in his absence.
- The paying OPD is run only one day per week. It was observed that only 10 patients were given appointments and others were scheduled for the next week. To increase revenues, the paying OPD should be open five days per week.
- Remodeling the ward for admitting paying patients should happen only after implementing the above and after a pricing structure is created.
- A refractionist needs to be appointed or an ophthalmic assistant needs to be trained in refraction. A separate category of refractionist staff should be created.
- All staff should receive continuing medical education (CME).
- Dr. C is encouraged to continue to exercise his leadership to ensure that staff follow the new systems and procedures for high quality, large volume, and sustainable cataract surgery.

Appendix - 4
Hospital Support Systems and Procedures

A. Financial and accounting Systems
B. Reception and registration
C. Medical records
D. Housekeeping
E. Maintenance
F. Stores (Materials management)
G. Security
H. Pharmacy and optical shop
I. Dietary Services
J. Management information systems (MIS)
K. Patient scheduling system

A business house earns money for its performance. Unlike business houses, the performance of NGOs cannot be measured in simple terms of profit. Therefore, they have to be more cost-conscious, given the temptation to rest content with the goodness of the cause. Further, the money earned in business is its own. NGOs, on the other hand, are only trustees of the money they spend. For these two reasons, it is essential for NGOs to adopt transparent financial management systems.
- Pradeep Kashyap

A. Financial and accounting systems

Introduction

Financial management (or accounting) is essential in all organisations that deal with money, regardless of type or size. The primary purpose of accounting is to provide useful financial information about the organisation's activities and affairs. This information is vital for the internal management of the organisation and sometimes just as important for decisions made by parties external to the organisation.

Need for financial management in an eye care programme

Financial management is a dynamic system that helps an eye care programme achieve its objectives of high quality, large volume and financial sustainability.

- As a prerequisite for monitoring and evaluation, financial management can help improve the quality of various activities of the hospital. The "budgeted" and the "actuals" are compared, and reasons must be given for variances.
- Financial management can augment the productivity of the hospital by optimising the use of manpower and infrastructure.
- By providing information on all activities in financial terms, financial management can help in the decision making process for questions such as what to do, how to do it, when to do it, how much to do, for how much, etc.

Advantages of a financial management system

- Makes it possible to project future plans for expansion, because growth can be tracked and assured
- Can determine and fix prices that lead to sustainability
- Accountability is 99% assured

- Makes taxes/audits/government red tape much easier to deal with
- Tracking daily cash receipts = smooth cash flow

Cost centre approach

A "cost centre approach" to the accounting system helps in better cost control. In this approach, the accounting system should be able to identify money spent in each department. This set of cost data, over a time period, when compared with the output of each department (for example, in outreach work, the number of cataract operations or school children examined) gives the cost trends for each unit of output. This means:

- the cost per case can come down only with increasing volumes
- surplus from each case treated beyond the break-even volume can be very high.

Accounting Guidelines for Gifts and In-Kind Contributions

An important feature that separates the non-profit or charitable entity from the more traditional commercial corporation is the presence of gifts and in-kind contributions. The contributions make take the form of cash for capital expenditure and operating expenses, or donations of labour, materials, equipment, and physical plant infrastructure. Accounting for these contributions faces a number of complexities dealing with both valuation and income measurement. Unless consistent and similar approaches to valuing in-kind contributions are utilised, comparisons across facilities or programmes are not feasible.

The contribution of equipment and other physical plant assets should be accounted for separate from other balance sheet assets in a special contributed capital account. Contributed capital should not be included as revenue when received, but when the asset is depreciated; that portion of the asset reported as depreciation expense within a particular accounting period is reported as revenue in the same period. Gifts of capital continue to affect future income statements throughout the life of the asset. By maintaining a contributed capital account within the balance sheet, this revenue allocation over time is straightforward.

Cash contributions (donations, grants, subsidies) intended to cover current operating expenses (as opposed to capital investment) are reported as revenue when received. [However], contributions for operating activities that will take place in future periods should be treated as balance sheet liabilities when they are received and become revenue in the period in which expenses are incurred for these activities. It is not uncommon for large contributions to be earmarked for operating expenses in future years. Cash contributions intended for an institution's endowment are treated as capital inflow, and do not affect measurement of income; however, endowment earnings used for operating expenses are reported as revenue in the period used. Contributions to cash reserves intended for capital expenditure are treated as liabilities when received and reported in the contributed capital account when the expenditure takes place. An amount equal to depreciation is reported as (offsetting) revenue each year.

Contributions of in-kind consumable materials and supplies [as well as volunteers] are recorded simultaneously as both revenue and expense in the period in which they are used. Materials and supplies received in one accounting period but not used in that period should be recorded as a liability when received and then as revenue and expense when used.
- Leon Ellwein, R. D. Thulasiraj, A. R. Boulter, S. P. Dhittal

[I]t is possible to evaluate the financial performance of not-for-profit non-governmental medical service organisations. With uniformity in accounting for gifts and in-kind contributions, comparisons across such organisations can be made. [Once the required information is delineated], interested parties can ensure that the necessary records are maintained.
- Leon Ellwein, R. D. Thulasiraj, A. R. Boulter and S. P. Dhittal

Valuation Guidelines

Valuation of donated equipment or other capital assets should be based on fair market value to the recipient at the time of receiving the donation. Gifts of supplies and medical consumables should also be valued based on local markets. (There may be a tendency among donors to value in-kind contributions at maximum retail price in the donor's locality, rather than the actual market value in the recipient location.) Donated equipment or supplies that are not usable should be disregarded. Because in-kind contributions are not necessarily need-based, not all donations will be usable, either because of uncommon specifications or because the quantity is far greater than what can be reasonably consumed. The determination of market value should give consideration to substitutable supplies that may be less costly. Whatever the specific circumstances, useful donated items should be valued at prices at which they, or an equivalent product, can be locally procured, or at which they can be competitively imported.

Valuation of donated personnel time can be based on local salaries and wages for such work. Valuation of paid work by expatriates should utilise actual salary costs to the sponsoring organisation for the portion of time devoted to the organisation/ programme being evaluated. (This amount may be higher than that based on local valuation, but is reflective of actual cost.) Here again it is important to apply the same rules of usefulness and relevance before assigning a value. Unsolicited volunteers in programmes are sometimes there for the experience and may not contribute anything to the program itself.
- Leon Ellwein, R. D. Thulasiraj, A. R. Boulter and S. P. Dhittal

B. Reception and registration

Introduction

The reception and registration of patients often creates their first impression of an eye hospital. This department's role thereafter a vital one.

Attributes of effective reception and registration

- Ensures a warm and comfortable welcome to all patients, attenders and guests
- Ensures that all are dealt with equally, promptly and courteously
- Ensures that accurate and reliable information and guidance are given to the right people as per their needs and requirements
- Ensures that patients waiting time is kept to a minimum and that they are kept informed of possible delays
- Ensures effective implementation of admission and discharge processes
- Maintains confidentiality and protects the legal interest of the patients, the hospital and its staff
- Ensures that accurate and complete medical records are retrieved, filed and maintained (see next section on medical records)

C. Medical Records

Introduction

Medical records are defined as clinical, scientific, administrative and legal documents relating to patient care in which sufficient data is recorded — written

in sequence of events — to justify and document the diagnosis, treatment and end results.

A medical records system is organised to render service to the patient, the medical staff, the hospital administration and the community. The medical records department maintains these records and documents. Records management involves the functions of creating, administering, retaining, submitting and archiving or destroying records. Medical records are important to the hospital for evaluating its services and improving its efficiency.

A medical record is the major document available for clear, concise exchange of pertinent information among the professional disciplines involved in the patient's care. When the hospital uses the medical record as a basis for communication, issues can be highlighted and clarified, and solutions for new problems can be easily initiated. Adequate recording increases the quality of follow through to relevant resolution.

The basic principles involved in maintaining a smoothly functioning medical records department are similar in all hospitals, regardless of size. Large teaching hospitals that support training programmes for interns, residents and nurses usually find it necessary to elaborate on the basic records to fit their needs.

Purpose of medical records

Medical records are primarily for improving the quality of clinical care to the patients, substantiate diagnoses, warrant treatments and accurately document and justify end results. This primary purpose should determine basic content and format of the medical record. The secondary purposes of records can be to meet the legal requirements imposed on the hospital and the physician, and to provide clinical data of interest to researchers and clinical data research systems.

Format and content of medical records

The medical record is the written down who, what, when, where, why and how of patient care. Medical records are the visible evidence of what the hospital is accomplishing. Patient care is the primary purpose of any health care system. Because of this, the objective of any effective medical record system should define the content, methodology of organising clinical data, desired manner and style of recording, set standards for adequacy of information and timeliness of entries, and justification for exclusion and inclusion of information.

Essential attributes of medical records

If the record is legible, compiled in a timely manner, and contains sufficient data to identify the patient, all staff concerned with that patient will be well informed of the patient's status. A medical record should give a picture of the patient's illness, together with physical findings and special reports such as X-Ray and laboratory.

- Comprehensible: records must be legibly written, and the language used should be simple and understandable.
- Complete: records should be thorough in order to be easily understood

when retrieved for follow-up care, planning, policy making and decision making.

- Properly formed: the format of records should be evaluated and screened at regular intervals to weed out information not required in future; this helps make information retrieval more efficient.
- Efficient: records should be managed and efficiently and economically in order to achieve more with minimum effort and cost. Reducing retrieval time, for example, is essential for effective management of a large volume programme.
- Accurate: records must be accurate to be useful.
- Timely: records must be kept up-to-date at all times.

Characteristics of medical records

- Ownership:

Medical records developed in the hospital or under its auspices are considered to be the physical property of the hospital. However, in many jurisdictions, the information contained in the records is the property of the patients and thus must be available to the patients and/or their legally designated representatives upon appropriate request.

- Disclosure:

The hospital has the right to restrict removal of the medical records from its premises, subject to legal provisions, and to determine who may have access to their contents and what information may be disclosed.

- Confidentiality:

Confidential information and nonconfidential information are the terms used to classify medical records for security reasons. The confidential category includes reports in the medical record that are based on examination, treatment, observation, or conversation with the patient. Nonconfidential information might include patient identification and nonmedical facts, usually found on the cover of the medical record. Patients have the right to expect that records pertaining to their care will be treated as confidential and that the hospital will safeguard their records against unauthorised disclosure. The advice of local legal counsel is essential in determining legal aspects of the medical records.

Accessibility:

Medical records should be used within the hospital only and only by authorised recipients on a need-to-know basis. The responsibility of disclosure of medical record information — with or without authorisation of the patient — should be delegated to hospital personnel who know or understand the characteristics of medical records and the reliability of recorded information, and who recognise the occasional situation that requires the advice of a medical staff member or the hospital's legal counsel.

Uses of medical records

The document compiled as the medical record contains a wealth of information and has many uses, both personal and impersonal. Personal use refers to

usage in which the identity of the patient is maintained and is necessary. A request for copies of portions of a patient's record by the insurance company that provides hospitalisation coverage for that patient is an example of personal use in some countries. The copies are provided in order for the insurance company to process the patient's insurance claim and thus provide a service to the particular patient.

Impersonal use refers to the situation in which the identity of the patient is not retained and is not necessary. An example is the use of anonymous data from many different medical records in research.

The medical records department must concern itself with this distinction because proper authorisation by the patient or a legal representative must be given before information can be released for personal use.

The medical record is used in a number of ways:

1. Patient care management
   - to document the patient's condition and treatment during each episode of care
   - to communicate between the physician and other health professionals providing care to the patient
   - to inform health professionals providing follow-up or future care
2. Quality review
   - to provide a basis for evaluating the adequacy and appropriateness, safety and efficacy of care
3. Financial reimbursement
   - to substantiate insurance claims of the health facility and patient, where applicable
4. Legal affairs
   - to provide data to assist in protecting the legal interest of the patient, the physician and the hospital, when necessary
5. Education
   - to provide actual case studies for the education of health care professionals
6. Research
   - to provide data to expand the body of medical knowledge
7. Public health
   - to identify disease incidence so that plans can be formulated to improve the health of the nation and the world

Value of medical records

1. To the patient

A medical record contains data regarding a patient's past and present health and documents physical findings, results of diagnostic and therapeutic procedures, and the patient's responses. Because physicians provide care to a number of patients during a given period of time, they are not expected to remember the significant details of each patient's illness and treatment. Thus the record serves as reference for both patient and physician. The record certainly

helps the physician who treats the patient during follow-up or subsequent care, so continuity of care is provided to the patient. It provides substantiation of care given, which is needed for the processing of the patient's health insurance claim in some countries.

2. To the health care facility

It is of value to the hospital in that it provides data to evaluate the performance of the health care professionals working in the hospital and to evaluate the facility's resources such as special diagnostic equipment and services offered by the facility. Because the medical record documents the care given, it can be used, if necessary, to protect the legal interest of the hospitals should a lawsuit arise.

Medical records also help the facility to provide more efficient service. For example, for patients with specific problems like hypertension or diabetes, bright stickers are placed in their charts so that these patients are easily be recognised for special attention. Another trick is to file case sheets in numeric sequence to simplify filing and retrieval. The use of tracer cards and linking cards helps to track these records quickly.

3. To health care providers

The medical record provides information to assist all professionals in caring for a patient during the current visit and during subsequent visits to the facility. The record documents the care given by each professional, thus protecting their legal interests. The record assists physicians, in particular, in providing continuity of care when the patient is discharged from the hospital and is followed up in the clinic. All health professionals can review records of patients for whom they have provided care.

4. To educators, researchers, and public health officials

The medical record contains information that assists health professionals and students in health professions in the educational process when they review the record for study purposes. The record is indispensable in furthering medical research by supplying a data base for evaluating the effectiveness of treatments for specific diseases. Statistics developed from data gathered in this manner might document the need for local, national and world health programmes.

D. Housekeeping

Introduction

Housekeeping is one of the basic functions essential to the operation of a health care institution. It is housekeeping's responsibility to maintain for the patient and the employee an environment that is

- safe, and providing maximum bacteriological control throughout the hospital environment
- pleasant, with furnishings whose design and colour are pleasing to the patients and conducive to their recovery
- functional, with everything necessary to the patients' recovery properly maintained and conveniently arranged.

Responsibilities of the housekeeping department

1. Environmental sanitation areas

- public areas such as lobbies and reception areas, canteens
- circulating spaces such as halls, elevators, stairways
- patient accommodation
- operating theatre(s), outpatient treatment rooms, laboratory
- toilets
- service and supply rooms

2. Environmental sanitation procedures

- window washing
- wall washing
- floor care (including rug and carpet cleaning, where necessary)
- furniture dusting, washing and polishing, upholstery cleaning
- light fixture cleaning
- rubbish removal
- disinfection
- ensuring clean linen

3. Noise control

- reduction of noise made by large equipment
- soundproofing of housekeeping and maintenance equipment

4. Interior decoration

- furniture repair and refinishing
- replacement of furniture and furnishings
- drapery making and/or repair
- ensuring attractive surroundings

Cleaning: The cleaning of windows, doors, walls, etc. helps in arresting deterioration and preserving appearances.

Preservation: With the help of protective coatings of paints, varnishes, waxing of floors, etc., the building and its furnishings can be preserved.

Replacement and Repair: This involves timely repairs or replacement of sanitation equipment, water supply, electrical fittings, etc.

Basic cleaning operations

Sweeping

A broom or dry mop is moved over a floor surface, with repeated strokes, to brush the surface clean or clear the surface of dirt.

Mopping

A collection of coarse yarn, fastened to a handle, is rubbed or wiped across a surface with the technique that applies varying degrees of wetness.

Dusting

Dust is removed by wiping with a cloth. In patient areas, the need for infection control measures requires the use of damp or treated cloths. This technique is customarily used on surfaces such as furniture, equipment, ledges, window sills, walls, woodwork, light fixtures and anywhere else that dust might collect.

- low dusting: when the procedure can be done easily by a worker standing on the floor
- high dusting: when a long-handled tool or a ladder must be used to reach the surface to be dusted

Waxing

A protective coating, often polished by friction, is applied to a surface. It is done on floors, furniture, wood-paneled walls, and other appropriate surfaces. Some floor finishes contain little or no natural wax, yet are glossy and nonskid, require little or no buffing (polishing) and resist marking from shoes.

Qualifications of Housekeeping Supervisors

To fulfill the obligation of maintaining a safe, pleasant and functional environment for patients and staff, the person responsible for housekeeping should have the following abilities and skills:

- basic knowledge of health care hygiene and sanitation
- ability to plan, administer and develop all phases of a comprehensive housekeeping programme that will provide a suitable environment for the institution's medical and administrative activities
- demonstration of personal qualities of leadership and skill in coordinating a major activity within the administrative programme
- general working knowledge of cleaning operations and interior decoration
- ability to assign, supervise and evaluate the work of subordinate supervisors and their personnel
- ability to develop the departmental budget and to direct the expenditure of monies

Interdepartmental Relationships

The relationship between the housekeeping department and other departments is inherently intricate. Not only do housekeeping activities cover a wide range, but the timing of procedures is affected by the work of other departments. Usually the convenience of housekeeping must be sacrificed to the convenience of the departments it serves. Not one department can be without housekeeping services, yet it might be impractical for the housekeeping department to organise its own work entirely for its own convenience. One of the most difficult tasks of housekeeping, then, is to provide its service at the optional convenience of other departments, through highly developed coordination and the efficient performance of providing a clean, attractive, safe environment.

In general, the major cooperative responsibilities of all departments are:

- Elimination of avoidable interference with housekeeping work. Every other department has a fundamental responsibility to facilitate the housekeeping function as much as is possible and practical.

- Appreciation and understanding of the value and complexity of housekeeping work.
- Cooperation by other departments' members in cleaning up after themselves when they spill or drop things. Sometimes, of course, the difficulty of the cleaning job requires that housekeeping be called, or perhaps a housekeeping employee is in the area with the necessary equipment at hand.
- Letting the housekeeping department know immediately if something needs attention.
- Attending to something as soon as possible if the housekeeping department has requested help (from maintenance or administration, for example).

Training curriculum for housekeepers at Aravind Eye Hospitals

Aravind's on-the-job training programme for housekeepers includes:

- understanding of the need for high levels in hygiene and sanitation
- some clinical knowledge and knowledge of the hospital (in order to be useful to patients who ask housekeepers for guidance and directions)
- technical aspects of housekeeping (cleaning techniques)
- human relations and communication skills (for dealing with patients and other departments)
- supervisory skills
- fieldwork (visits to local institutions to view their housekeeping procedures)

E. Maintenance

Introduction

Maintenance means preserving and keeping things in good working condition, through prevention, detection and correction of faults, damage and wear. The best way to preserve infrastructure and equipment and keep everything running efficiently is to do maintenance checks at regular intervals and repair any parts that are likely to wear out or have worn out. These inspections must be done by competent and properly trained people.

Importance of maintenance

Maintenance is important to the hospital because:

- The building and equipment should be ready for use at all times.
- Quality of care as well as productivity depend partly on the building and equipment being in good condition at all times.
- The building and the equipment have been heavily invested in and should be well taken care of to ensure longevity.

Responsibilities of the maintenance department

The maintenance department's responsibilities include:

1. Plant facilities (infrastructure)

- building
- electrical / lighting
- plumbing
- generators / power station

- air conditioning / heating
- communications infrastructure
- transportation / elevators
- carpentry

2. Equipment

- medical
- nonmedical (e.g., audio-visual)
- office (photocopier, typewriters)

Role of the maintenance department

The maintenance department is responsible for the performance and coordination of the following areas:

1. Routine preventive maintenance
2. Equipment installation and user training
3. Emergency (breakdown) maintenance
4. Equipment selection and acquisition
5. Review of contract maintenance

1. Routine preventive maintenance

Routine preventive maintenance is done on a regularly basis; scheduling is necessary in order to ensure this work. It is the cleaning, lubricating, adjusting, checking for wear and tear, and perhaps replacing of components that might cause total breakdown or serious functional impairment of the equipment before the next scheduled inspection. Preventive maintenance will help eliminate hazards (and threats to quality and productivity) before they develop. With some of today's sophisticated electronic equipment, there are many problems that can occur suddenly and therefore cannot be detected or prevented by routin preventive maintenance procedures. For some equipment, therefore, it might be necessary to have duplicates on hand so that the spares can be used when the original piece of equipment is being repaired, on site or off.

2) Equipment installation and user training

The maintenance department is often responsible for installing new equipment or overseeing its installation. The hospital will want to provide training to maintenance staff when new equipment is installed, in order to ensure that the maintenance department can service and repair it. In case of new equipment the users will need to be trained in its operation and precautions if any.

3) Emergency (Break down) maintenance

This type of maintenance requires immediate action. The maintenance department should develop an efficient referral system so that they are informed about new problems and can take steps to rectify them as quickly as possible. This will help maximise the operational efficiency of the hospital equipment and reduce the downtime of malfunctioning equipment or infrastructure. The hospital should have a generator to ensure continual electric power. Without a generator, every aspect of the hospital's work will be affected whenever there is a power failure. An electrician should be assigned to monitor the generator and the electrical system.

When any equipment breaks down, all its parts do not breakdown at the same time. Locate the part that has failed and the piece of equipment will be easy to repair.

- Prof. V. Srinivasan, Head Instruments Maintenance, Aravind Eye Hospital

4) Equipment selection and acquisition

The maintenance department might be asked to act in an advisory capacity to both administration and medical staff in the areas of equipment selection and purchase, safety, reliability, suitability, etc.

5) Review of contract maintenance

Some specialised equipment is serviced and maintained by outside engineers on a service contract. The hospital pays a certain amount per year, according to terms and condition made in the contract, and the outside service engineers do regular maintenance and can be called for emergency maintenance. The hospital continues to do the preventive maintenance, if this is allowed in the contracts. These contracts might include servicing of:

- air conditioning system
- telephone
- water cooler
- computers, printers and auxiliary equipment
- photocopier

Use of computer systems in maintenance

Currently, computerised systems are used in maintenance departments for:

1. Work planning
    - information lists
    - equipment lists
    - documentation sheets
    - inventory control
2. Reports
3. Service orders / work orders
    - communication
    - estimating
    - scheduling
    - record keeping
    - cost containment
    - labour and material control

F. Stores (Materials management)

Introduction

In short, materials management means keeping track of all the hospital's supplies. It is the analysis, planning, implementation and control of carefully developed systems and programmes designed to achieve maximum cost efficiencies in the variable cost areas of supplies, equipment, services and personnel, consistent with organisational objectives. Materials management includes all aspects of purchase or procurement, inventory managment, and issue and usage. It might include vendor negotiations, routine purchasing after sources have been established, demand forecasting, budgeting for supplies, maintenance/ disposal/recycling of supplies, receipt inspection and payment, stocking and

storage, inventory control and loss prevention to minimise loss due to spoilage or pilferage.

Importance of stores

Efficient storekeeping helps to keep productivity high. Materials management is one of the key factors for improving performance of any department. Higher inventories mean higher (avoidable) costs, and they block scarce funds that might be required by the organisation for operations or essential development.

Role of stores

The task of storekeeper relates to safe custody and preservation of the material stocked, to the receipts and accounting, and to the issuing of supplies. The storekeeper's tasks are:

- to maintain the continuity of supply by ensuring that all the materials are available at needed time at an optimum cost
- to facilitate the hospital operation by providing high quality goods
- to reduce the operating cost
- to decide whether to make or buy
- to exercise control over the usage of goods

Principles of storekeeping

Supplies can be categorised under three headings: vital, essential and desirable. These three categories will determine how much of each item should be in stock at any given time. There are seven principles of material management that must be kept in mind to ensure good results. The storekeeper in charge must follow these principles or "7 Rs."

1. Right time
2. Right quantity
3. Right price
4. Right source
5. Right delivery
6. Right methods
7. Right people

Models and systems of storekeeping

Stores departments can be centralised and decentralised. A centralised material management network focuses on the supplies needed for each activity or function of the entire hospital. A decentralised material management model is one where each area or department performs the various material management functions itself.

G. Security

Role and responsibilities of security department

Security has a very important supporting role in the hospital. The security department carries full responsibility for the safety and security of the hospital facility, its properties, staff and patients. Their duties are to prevent congestion and loitering, and to deter theft, snatching of gold ornaments, and other crimes at all times. Their presence should act as a deterrent to crime.

Activities of the security department

- Do rounds in all parts of the building (outpatient areas, wards, main gate and grounds of the hospital) on a regular basis, 24 hours per day.
- Ensure that all people present are staff, patients or patients' attenders.
- Check into unusual happenings.
- Give guidance to patients and their attenders when other staff are not on duty.

Qualifications for security department

At Aravind Eye Hospitals, security guards are ex-servicemen with basic academic qualifications. They must show themselves to be brave, active, healthy people. And since the security guard is often the first hospital staff member met by patients, they must also be service-minded and courteous.

H. Pharmacy and optical shop

Introduction

The pharmacy and optical shop are among the most important supporting departments in an eye hospital. Both can contribute to high quality, and sustainable cataract surgery programme. To control the quality of medications and spectacles, both shops should be inside the hospital premises. Having them inhouse also helps to keep the hospital running by generating additional revenues.

Attributes of an effective pharmacy

- The pharmacy should be open during extended business hours, and available for emergency purchases as well.
- Stock should exceed expected demand so that shortages never occur. An experienced pharmacy supervisor should monitor purchasing and inventory to minimise loss due to spoilage. Bulk purchasing will help keep costs low.
- Quality must be maintained very carefully to avoid errors and to ensure patient satisfaction and their well being.
- All staff must be well trained, knowledgeable and courteous.
- The pharmacy should be situated for easy access to patients or their attenders.
- Efficient service will help ensure the hospital's productivity and reputation.

Attributes of an effective optical shop

- Access to postal or courier services is necessary since prompt delivery is vital.
- If lens grinding occurs on site, the manufacturing area should be located near the optical shop for quick service.
- The optical shop should be treated like a retail business, with regular business hours, ample space for customer comfort, as well as friendly, helpful and knowledgeable staff.
- Quality must be monitored and maintained to ensure that patients receive the correct power in their glasses.

- A wide choice of glasses and frames should be available for purchase.
- All available frames should be hypoallergenic.

H. Dietary services

Introduction

Dietary services are important in a hospital that provides inpatient care. Nutritious and delicious meals help ensure patient satisfaction and aid the healing process. Service is usually provided inhouse, but may be contracted to a responsible caterer. Meal service will be determined by local customs, hospital routines and procedures, and patient preferences. Nonpaying patients can receive free or low cost meals. Paying patients may expect meals to be included in their surgery and accommodation fee.

Attributes of effective dietary services

- Meals should be available within hospital premises. Many patients will expect room service.
- Foods must be of high quality. Patients with special diets, such as diabetics, must be served appropriate meals.
- The capacity of dietary services should match the expected volume of patients. In a growing eye care programme, this might mean expanding or renovating the kitchen space, purchasing more cooking equipment, and hiring more staff.
- Staff must be well trained and knowledgeable about nutrition and special diets. Staff should understand the connection between dietary services, patient satisfaction, large volume and low cost.
- Patient attenders can bring revenue to the hospital, where appropriate, through their business to the canteen or coffee shop.

J. Management information systems (MIS)

Management information systems play a key role in high quality, large volume, sustainable eye care setting:

- Patient load (daily)
  - OP attendance - new and review patients
  - admissions and discharges
  - eye camp statistics
  - operations done
  - operations scheduled for tomorrow
  - bed occupancy
- Demand pattern (monthly)
  - geographic distribution
  - sources of motivation to come to the hospital
  - morbidity distribution
  - patient load
  - growth over previous year (for the month and cumulative for the year)

- Financial (daily patient revenue, monthly income & expenditure statements with vertical analysis and comparison with previous year and current year budgets)
- On other resources
  - summary of employee attendance
  - vehicle utilisation
  - purchases and issues summaries
  - maintenance - building, equipment and vehicle
- Patient satisfaction
  - compliments, complaints and suggestions
  - patient surveys
- Quality assurance
  - complications - nature, surgeon and nurse
  - sterilisation
- Report of variations to set norms in all areas
  - length of stay
  - out-of-stock items

These information systems should help in the analysis and understanding of key issues relevant to a particular programme and decision-making. They should facilitate for instance, analysis of surgeries per bed, surgeries per surgeon, bed occupancy, length of stay for each type of surgery, changes in morbidity and demand pattern. The content and level of detail would depend on the person getting the report. The chief doctor or the administrator should receive aggregate information and a reporting of exceptions while the supervisory level staff would need much greater detail but perhaps less scope.

Components of MIS

On the process of monitoring and evaluation, three components are to be distinguished: information collection, data flow, and analysis and evaluation.

1. Information collection

- decide WHAT information to collect, WHY, WHO will collect it, from WHERE (which departments will report) and WHEN (at which time intervals)
- the information collected must be APPROPRIATE and RELEVANT to the problems posed
- the information must be ACCURATE
- it should be FEASIBLE to collect this information without much effort or cost
- don't be tempted to ask for too much or too detailed information, as this leads to incomplete or inaccurate reporting, delays in data flow, and even more delays in data analysis, evaluation and feedback

2. Data flow

- data must go to a central point for analysis and evaluation
- data flow must be complete and timely, with no delays

Analysis and evaluation

- pose the same questions: WHAT to evaluate and WHY, WHO will do it, WHERE (at what level of the organisation, district program or government), WHEN (how frequently)?
- the level at which analysis and evaluation is done will determine the type of information to collect, the reporting units, intervals, etc.

Parameters to monitor

- Quantity - Output
  - Number of cataract operations/year
  - Number of sight restoration operations
  - Cataract Surgical Rate
- Quality - Outcome
  - Success rate = % eyes achieving VA >6/12 vision
- Cost
  - Cost/case finding
  - Cost/surgery or service
  - Cost of support services
  - Price of the services

The number of cataract operations alone is a poor indicator. By relating this figure to the surgical unit, we can have a better impression of the efficiency and effectiveness of these units. By relating the number of cataract operations to the population in the district or state, we can have a better idea of case finding and the impact and coverage of the surgical services. By relating it to the number of operating eye surgeons and ophthalmic beds, it informs us on the workload and utilisation of manpower and infrastructure.

Dr. Hans Limburg

Basic statistical measures used to assess and monitor cataract surgery services

Sources of statistical data

1. Prevalence (backlog)/Cross sectional surveys
   - people
   - eyes
2. Incidence (new cases each year) Longitudinal (cohort) study
   - people
   - eyes
3. Cataract Surgical Coverage Rapid epidemiological assessment
   - aphakic/pseudophakic persons x 100
   - cataract blind persons + aphakic/pseudophakic persons
4. Cataract surgical rate Hospital records + census
   - cataract operations/year
   - target population in million
5. Number cataract operations
6. Number cataract operations on blind people/Hospital
7. Number people blind after surgery /Records
8. Number people with restored sight (#6 - #7)
9. Success rate Hospital records
   - % of operated eyes with cataract achieving VA *6/12 postoperatively

- **#1 to #6, #8 are indicators of quantity**
- **#7, #9 are indicators of quality**
- **#1 to #4 are for planners and policy makers (to assess and monitor services)**
- **.#5 to #9 are for ophthalmic surgeons (self-evaluation and monitoring)**

K. Patient scheduling system

Introduction

A patient scheduling system will help in the management of demand variability. It will also:

- reduce congestion in the operating theatre area
- lead to more personalised service
- allow staff to inform patients of the time of their surgery (as well as the name of their surgeon and expected date and time of discharge)
- develop specific timing for preoperative procedures
- reduce the number of staff needed in the blockroom and OT.

Managing demand variability

In the manufacturing industries, variability in demand can be handled by the use of inventory. Unfortunately, in the delivery of health care services this option is not available. Health care services cannot be produced and stored for later delivery. The peak in demand cannot be met by storing health care services produced in the slow periods. This means that other creative strategies must be used to cope with the inherent problem.
- Vinod D. Sahney

Some alternative strategies for smoothing the demand generation process:

- Reservation systems (avoiding long patient wait times by use of an appointment system, with either individual or block appointment times)
- Complementary demand (ensuring that inpatients and outpatients use the same facility at different times; for example, if outpatients are usually sent to the X-ray Department between 10 am and 2 pm, be sure that inpatients needing x-rays are sent before 10 am and after 2 pm)
- Shifting demand (changing patient behaviour, for example, by displaying a large chart indicating when the longest wait times occur in the clinic, allowing local patients to plan their outpatient visit for a slow period)
- Demand triage (assign different priority to different categories; for example, if lab test results must be returned in a timely manner before inpatients can be scheduled for surgery the next day, ensure that inpatient results take priority over outpatient results)
- Merging demand (create flexibility so that pooling two streams of demands can occur; for example, allow the two staff members assigned to registering new patients and review patients to combine their efforts if one is busier than the other)
- Splitting demand (sometimes the service required to satisfy demand during peak times can be reduced by doing certain tasks during slow periods; for example, patient counsellors can check that all tests have been done before an outpatient is admitted, thereby relieving the nursing staff from having to do this next morning in the rush to prepare patients for surgery)

  - Adapted from Managing Variability in Demand: A Strategy of Productivity Improvement in Health Care Services, by Vinod D. Sahney

Some alternative strategies for altering the service capacity:

- Part-time employees (if there is a predictable peak in demand during certain hours of the day or certain days of the weeks, hire part-time employees who work only a limited number of hours per day; offer them fair benefits)
- Overtime (in some settings the demand fluctuations are not predictable in advance; in these cases it is clearly more economical to pay overtime to someone working an extra hour or two than to add a new staff member)
- Incentives (encourage employees to take their vacation or training during slow periods such as festival or harvest times; offer a bonus, if necessary, as extra incentive, since many employees are hesitant to take time off during slow periods since the work pace is easier then)

- **Labour cross-training (the key is to match services in departments where the highest demand occurs at different times of the day, and cross-train personnel to help each other during the peaks)**

—Adapted from Managing Variability in Demand: A Strategy of Productivity Improvement in Health Care Services, by Vinod D. Sahney

Data collection

To schedule tomorrow's operations, data must be collected on:

- doctors who are operating
- estimated throughput per hour (the workload of surgeons varies, but averages 4-5 cases per hour; more experienced surgeons work faster than their junior colleagues, hence can accomplish more surgeries per hour; less complicated surgeries are given to trainees under the guidance of a senior surgeon)
- list of patients for surgery, grouped by
  - type of anaesthesia and surgery
  - diabetic, cardiac, asthmatic, hypertensive, fasting blood sugar cases, and culture requirement

There is a constant monitoring in the outpatient department at Aravind's nonpaying hospital of the flow of patients and availability of manpower. If a bottleneck in the patient flow occurs at any stage, additional staff are mobilised whenever possible to maintain a smooth patient flow.

- Raheem Rahmathullah

Data processing

To schedule tomorrow's operations, data must be processed to create:

- schedule for dilation and checking preoperative preparations
- schedule for mobilising patients from wards to OT
- ensured arrival of patients at OT
- posting for surgeons

Scheduling guidelines

- ward by ward (or floor by floor) basis
- hourly basis
- schedule so that doctors start with simple cases and work toward more complicated cases
- first batch: clinically normal cataract, IOL, phaco, glaucoma
- second batch: asthmatic, hypertensive, cardiac, diabetic
- third batch: diabetic (fasting blood sugar), culture, cornea
- general anaesthetic cases will be scheduled in the first batch (and are usually dilated in the OT)
- retina, orbit (and paediatric, where available) scheduling is autonomous

Appendix - 5
Quality Assurance in Eye Care Programmes

Introduction

Quality assurance must be an integral part of every aspect of medical and administrative activity in an eye care programme. Quality assurance helps health care professionals and organisations provide care in the most efficient, effective and economical way.

Definition of quality assurance

Quality assurance is not synonymous with sophisticated procedures, superspecialisation, or the fanciest new technology. Simply, the aim of quality assurance is to establish quality control systems and procedures for monitoring and evaluating the quality of care and for ensuring that service of the highest possible standard is provided effectively and at reasonable cost.

Steps to quality assurance (QA)

The needs are so high. Go after one third of the need in your community. If your current target is 2000 cataract surgeries next year, go after 10,000 the following year. Once you've done ten thousand, 20,000 will be easy. Unless you keep your targets up, you won't be able to achieve your vision.

- Dr. G. Venkataswamy

1. Quality assurance as a vision

The initiative for any quality assurance programme is a shared "vision" of quality. Top management must feel convinced that high quality is an important and integral part of the organisation. But this is not enough. Employees at all levels, from sweeper to ophthalmologist to administrator, must share a common vision. It becomes the responsibility of top management to communicate and reinforce this vision continuously. The whole organisation should align towards the common vision. The vision should be a feeling that accompanies all employees while executing their jobs. A clearly refined vision is like a lighthouse, lighting the right path and the right decisions.

Moving from talk to action

Vision is important for simple, concrete reasons. A vision is the most fundamental impetus in empowering people to serve customers. It can inspire the people you work with to new heights of excellence. Without it, employees have little inspiration to do their best. And they lack the unifying ideas that help the people in great organisations join their efforts to achieve seemingly impossible common goals. A shared picture of what the organisation should be fosters independent action, wisdom, empowerment, and willingness to take risks to do the thing that is perceived as right....All employees need a clear vision as a guide in managing their own actions in a manner consistent with the company's goals. The ideal vision statement is...

- **clear**
- **involving**
- **memorable**
- **aligned with the organisation's values**
- **linked to customers' (patients') needs**
- **seen as a stretch — that is, difficult but not impossible.**

From Richard C. Whiteley, in The Customer-Driven Company: Moving from Talk to Action.

Our vision is to create a model eye care centre for high quality services to all the members of our community.

- Vision statement of Lions Eye and Blood Centre, Mombasa, Kenya, April 2000

The hard part is imparting the vision to all the people in an organisation so that they will share a profound commitment. The leader makes the vision real. He or she communicates it constantly, establishes challenging, often seemingly impossible, concrete goals that are driven by the vision, encourages others in the organisation to create their own compatible visions for their parts of the business, and embodies the vision in day-to-day behaviour.

- Richard C. Whiteley

2. Quality assurance teams

Once a broad vision is created, the second step is to form a quality assurance team that will be responsible for monitoring the organisation's activities to see that everything is steered toward the quality vision. The responsibilities of the team are to communicate the vision of the quality assurance programme as well as to plan, implement, monitor and evaluate all the processes associated with the programme. This team should include top management as well as the staff deemed crucial to the delivery of quality service. The team can also include sub-committees such as clinical quality and medical audit.

Introducing quality assurance

- **Elicit definitions of high quality service from department staff.**
- **Elicit suggestions and ideas for improving quality in their department**
  - **ideas involving a specific job**
  - **ideas to improve service not related to a specific job**
  - **ideas related to the department's image.**
- **Examine each suggestion to determine which quality issues are involved**
  - **helpfulness/service orientation (does the idea relate to how helpful the department is seen to be?)**
  - **accuracy (does the idea relate to how accurately the work is done?)**
  - **efficiency (does the idea relate to how quickly the work is done?)**
  - **other (does the idea relate to how other departments work? or to how departments communicate and interact?)**
- **Prioritise the ideas and agree on what the department will improve on first.**

- Dawn Leighfield

Although the team is accountable for reinforcing the concept of quality assurance, everyone on staff is responsible for assuring quality; the team's role is to provide effective leadership. The place to start is with assessing current standards for quality, moving into a continuous quality improvement process. Controlling and checking deviations from set standards is the responsibility of managers and department heads, but if the common vision is communicated properly and continuously, the intensity of control required will be lower because each staff member will feel they have a part to play in assuring quality.

3. Design for quality assurance

If performance standards are not set at the outset, then it will be impossible to determine whether the activity has been successfully carried out or effective.

- Dr. Hans Limburg

For the implementation of quality assurance in an eye hospital, the third step is the formulation of quality policies and objectives that are oriented and communicated to all levels of staff and to all individuals in the eye care delivery system. Obviously, ophthalmologists, along with ophthalmic assistants, refractionists and other paramedical personnel, have a lot to do in ensuring QA. But other support staff are also critical in the process. An eye hospital in south India discovered the indispensable role played by sweepers and cleaners, for example, when these employees went on strike.

1. Document all activities of each department in a procedure manual.
2. List all problems encountered at each activity level.

3. Solve each problem with decisions that will support the common vision of quality.
4. Implement the solutions, monitor, and make adjustments.

Monitoring and evaluation is one way of finding out whether we are on the right path, whether our health programmes and activities are meeting the needs they were designed to meet. It provides necessary information for effective decision making. Monitoring and evaluation are essential for planning of future health activities.

- Dr. Hans Limburg

4. Continuous monitoring and improvement

Designing and implementing a system that produces high quality hospital services is a great challenge to any administrator. But ensuring that high standards are maintained through a process of continuous monitoring and improvement, the fourth step, is an even greater challenge.

Monitoring refers to the continuous follow-up of activities to ensure that they are proceeding according to plan. It keeps track of achievements, staff movements and utilisation, supplies and equipment, and the money spent in relation to the resources available. This way, if anything goes wrong, immediate corrective measures can be taken. A good monitoring system helps in
- establishing standards of performance
- measuring actual performance, and
- comparing actual performance with established standards.

Success of monitoring depends on developing quantitative indicators of the input, activity and output level of the blindness control programme. Indicators must be comprehensive, reliable, valid and simple.
Dr. K. C. Premarajan

Dimensions of patient satisfaction in eye care

The policies and objectives for high quality eye care should take into account two major dimensions of patient satisfaction, as indicators to steer the whole programme in the right direction.

- Visual outcomes (post-surgical improved visual acuity, with no or low postoperative complication and infection)
- Delivery systems (efficiency, dignified treatment, patient-centred procedures)

Visual outcomes

The "product" or ultimate aspiration of any eye care service is to restore useful vision as much as possible to as many patients as possible. The better the restoration of vision, the better the "product." Hence, as part of the quality assurance programme in any eye care delivery system, ophthalmologists and other staff involved in the cataract surgery should measure the clinical visual outcomes on a continuous and regular basis (preferably every month). Evaluation of the visual outcomes then follows and necessary actions should be taken.

Delivery systems

Certainly clinical quality will serve as an impetus for quality assurance, but it does not serve the whole purpose. Equally important are the nonclinical aspects of the eye care programme such as admitting and discharge procedures, housekeeping, and physical comforts.

Patient satisfaction helps to market the hospital's eye care services and increase the number of patients utilising them. Research has shown that one

satisfied patient can be a source of about 10 more patients. It is therefore very valuable to invest considerable time, effort and resources into ensuring patient satisfaction in nonclinical areas. This can be achieved to a large extent by standardising the various activities, both clinical and nonclinical, that make up cataract surgery. The setting of standards must always aim to improve visual outcomes and delivery systems, hence patient satisfaction, in the most cost effective ways.

Quality as the patient defines it

As eye care providers (both individuals and institutions), we tend to define quality by our own perceptions and then try to deliver high quality services based on the criteria which we view to influence quality. In fact, we must choose a different paradigm: Quality is what the customers – in this case, the patients — value. It is their perception of quality, not ours, that matters in quality assurance. For example, behaviour that is viewed as efficient by staff could be viewed by patients as brusque and uncaring. Or, while hospitals work hard to keep their floors and walls scrubbed clean, patients will complain of a dirty hospital if they must stare up at a stained ceiling from their beds; staff, however, might never think to look up during their work day. Also, the hospital might improve upon the physical appearance of a treatment room, but if patients value staff behaviour more highly than physical surroundings, they will judge the institution on the behaviour of its staff. It is, therefore, helpful to study the criteria patients use to define their satisfaction.

Factors in patient satisfaction (in order of ranking by patients)
- **Medical care**
- **Cleanliness and maintenance**
- **Nursing care**
- **Clear information**
- **Behaviour of staff**
- **Physical facilities**
- **Charges/fees**
- **Waiting time**
- **Support services**
- **Responsiveness to complaints**
- **Image and integrity of hospital**
- **Personal attention and care**

- Aravind Eye Hospital, 1998

Patient expectations

Patient expectations are relative, changing from patient to patient and within the same patient over time. What some patients expect of an eye care facility will be different for others. All will have different criteria for quality:
- Urban patients versus rural patients
- Paying patients versus free patients
- Educated patients versus illiterate patients
- Confident patients versus fearful patients

- "Experienced" patients versus patients who have never been in a hospital
- Younger patients versus older patients
- Patients who live nearby versus patients who have come from far away
- Women versus men
- Children versus adults

Once we know exactly what our patients value, we can start delivering quality in the right direction.

What Patients Expect	What Patients are Concerned About
Short waiting time	Long waiting time
Good medical care	Poor treatment
Excellent hospitality	Rumours, misinformation
Credible assurance	Corruption
Affordable charges	Exorbitant charges
Courteous behaviour of staff	Fear about outcome of disease and effects
Perfect coordination of activities	Availability of specialist
Personal attention	Partiality in medical care
Discipline	Language barriers
Cleanliness	Pollution and nosocomial infections
Pleasant atmosphere	Fear of communicating with doctors
Good nursing care	Emergency situations
Good cooperation of the staff	Fear of surgery
Accountability & responsibility of staff	
Clear communication and information	

Tools for measuring patient satisfaction

There are many tools for measuring the level of patient satisfaction, including scrutiny of patient complaints, suggestion books or boxes, direct interviews, observation, focus group discussions, etc., but the most commonly used method of collecting and analysing data on patient satisfaction is by survey, using closed questionnaires.

Surveys will be able to show give the current performance against the standards, so as to determine steps for reaching the vision. The model questionnaire is designed to elicit patient level of satisfaction with each nonclinical aspect of their hospital experience. There is no one right way to prepare a questionnaire, however the following tips might be helpful:

- Since it is not possible to survey all patients who visit the hospital, a sample is selected at random. The number and size of the sample can vary according to the desired level of reliability of the survey. Scientific statistical methods can be used to determine the sample size, but surveying 10% of the total number of patients utilising the hospital's services in a month will supply much useful information.
- There are no rules about how often to administer a patient satisfaction survey, but every three months will ensure continuous quality improvement. Frequent evaluation may lead to chaos due to incorporation of frequent changes in the planned or ongoing activities.

- The primary data required can be collected by asking patients to tick the appropriate answers in a closed format using a Likert's five-point or seven-point scale of satisfaction.

When to evaluate? Once a year, preferably before the action plan for the following year is finalised. At the most, if felt necessary, a mid year evaluation can be carried out. Any temptation to carry out more frequent evaluations should be resisted since it will not be possible to incorporate frequent changes in the planned or ongoing activities.

- Dr. Raj Kumar

For example, the values for Likert's five-point scale could be:

Highly Dissatisfied	**0**
Dissatisfied	**1**
Moderately Satisfied	**2**
Satisfied	**3**
Highly Satisfied	**4**

- Leaving room for written comments will elicit specific details that will help the quality assurance team pinpoint the source of problems.
- In the case of patients who cannot read and write, the person collecting the data can use the questionnaire as an interview guide and tick the patients' responses.
- The scope of the survey should extend to outpatients, inpatients, patients from screening camps, and patients utilising the hospital's services for any other reason.

The preparation of patient satisfaction questionnaires is usually based on textbook instructions, forms from other hospitals, and one's own perceptions. In this process, there are some pitfalls:

- the use of existing models perpetuates their shortcomings or limitations
- cultural and social variations are not adequately addressed
- the surveys often reflect the service provider's perspective of factors influencing patient satisfaction, rather than the patients'.

Collecting some additional information on the patient satisfaction questionnaire such as age, gender, educational background, annual income, treatment, room type, and length of stay can facilitate better analysis of the responses, leading to more focused decisions for improvement.

Process of measuring clinical visual outcomes

Step 1 Set standards for visual outcomes (see "Benchmarks" in Appendix 1)
Step 2 Record the visual outcomes of patients
Step 3 Compile the data recorded in a comprehensive fashion for easy analysis, including types and numbers of complications, infections, etc.
Step 4 Measure surgical performances, by surgeon or by technique
Step 5 Analyse reasons for deviations from visual outcome standards
Step 6 Brainstorm solutions for resolving deviations
Step 7 Select from among the alternatives and implement
Step 8 Evaluate the implementation by review meeting, and reset standards for visual outcomes, if necessary.

Conclusion

The criteria of quality developed in one hospital or programme cannot be generalised to all situations, but the process it quality assurance is applicable everywhere. Every hospital needs to determine the expectations of "their patients" since perceptions regarding satisfaction can change from place to place, situation to situation, and person to person. Measuring, analysing and improving upon patient satisfaction and visual outcome will have direct impact on the quality of services and the viability of eye care programmes. Enclosed are Aravind Eye Hospital's inpatient questionnaire.

Once a quality assurance programme is in place it should provide the following benefits:

- **it will help identify training needs**
- **it will help measure the accuracy, efficiency, and service orientation of each department**
- **performance appraisals will be able to be done on both individuals and departments**
- **each department will be able to see how they contribute to the overall goal and vision, as well as to patients and to other departments**
- **Dawn Leighfield**

ARAVIND EYE HOSPITAL
INPATIENT FEEDBACK FORM

Aravind Eye Hospital is committed to high quality medical care and quality service. In order to assess our performance we would like you to take a few minutes to complete this questionnaire.

a. Name: ——————— b. Age: ——— Sex: Male / Female
c. M.R. No: ——————————————————-
d. Room no.: ——————————————-

Please answer all the questions by circling the number you feel to be appropriate. If you would like to add any comments or make suggestions, please complete these in the box at the end of the questionnaire.

Excellent=1 Good= 2 Average= 3 Poor= 4 Could not decide= 5

1. Your opinion about doctor(s) and medical care:

Doctors' competence	**1 2 3 4 5**	
Doctors' attitude & behaviour	**1 2 3 4 5**	
	Adequate	**Inadequate**
Listen to my problems	☐	☐
Time spent by the doctor	☐	☐
Explanation about my health and treatment	☐	☐
Explanation about any specific procedure/treatment	☐	☐
Daily visit	☐	☐
Privacy while examining	☐	☐

2. Your opinion about nurses and nursing care:

Smiling face/ polite/ friendly	**1 2 3 4 5**
Attitude and behaviour	**1 2 3 4 5**
Promptness in meeting the needs	**1 2 3 4 5**
Explained the process of treatment & progress	**1 2 3 4 5**
Provided psychological support/ reinforcement	**1 2 3 4 5**
Enquired about food/ night rest/ discomfort if any	**1 2 3 4 5**
Medication / treatment in time	**1 2 3 4 5**

3. How would you rate the charges and cost of services at the hospital?
   ☐ **High** ☐ **Reasonable** ☐ **Low** ☐ **Don't know**
4. How would you rate the attitude and behaviour of the ward coordinators / receptionists?
   1 2 3 4 5
5. How responsive were all the staff to your needs?
   1 2 3 4 5
6. How would you rate the level of communication and information you received at the hospital?
   1 2 3 4 5

7. How would you rate the general cleanliness of the ward?

   1 2 3 4 5

8. How would you rate the catering or food service at the hospital?

   1 2 3 4 5

9. How would you rate the facilities at the hospital (refreshment, pharmacy, etc)?

   1 2 3 4 5

10. How would you rate the facilities at the ward / room (space, furniture etc)?

    1 2 3 4 5

11. In which place did you have the longest waiting time?

12. Would you recommend the hospital to friends and relatives?

☐ Strongly ☐ Hesitantly ☐ Will not ☐ Don't Know

13. Overall, how would you rate the services offered at the hospital?

    1 2 3 4 5

14. Please add any further comments or suggestions you would like to make:

THANK YOU FOR THE VALUABLE FEEDBACK