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Lean Strategies at Sri Sathya Sai Institute of Higher Medical Sciences

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Abstract:
With recent advancements in the health sector, quality has become a predominant issue. As the demand for healthcare is rising with increase in population base and affordability levels in India, so is the demand for quality healthcare services. The Indian healthcare sector, in recent years has shown a lot of interest in ensuring quality and setting up quality management systems. Lean management emphasizes on reducing waste and defects in processes, bringing in more accuracy, reliability, credibility and customer satisfaction in processes of an organization. This paper summarizes the work which was carried out for more than a year long, which includes Sri Sathya Sai Institute of Higher Medical Sciences, Puttaparthy, India. The study apart from primary data also used various secondary data sources. The study explores lean strategies in the organization. Some of them being, the multispecialty-integrated approach of treating patients, delivery of services by an outreach program which is highly successful in rural areas of one of the districts of Andhra Pradesh, India; extensive use of IT to improvise savings. Although there is evidence of successful lean approaches in Indian healthcare establishments, they are random and scattered. There is still a long way before Indian health care industry adopts lean management on a regular basis. Finally, the study recommends that organizations must try to emphasize on continuous improvement through lean thinking and methodologies. Lean thinking is important as it tries to focus on waste elimination, cost reduction and increased customer satisfaction.

Keywords: Lean, Lean strategies, Lean methodologies, TQM

1. Introduction

Corporatization and competition in healthcare sector are forcing healthcare organizations to look for new ways and means for improving their processes. This is for improving quality of the hospital's products and services and reducing patient dissatisfaction. As healthcare sector is becoming more complex, the opportunities for errors abound. There is a need to breakdown the traditional boundaries that separate physicians, hospital administrators, pharmacists, technicians and nurses by shifting away from a culture of blame game and by working together to systematically design safer, more effective and efficient systems.

Lean methodologies help organizations to reduce variability and waste, translating to fewer errors, improve customer satisfaction, and provide better processes, greater patient satisfaction rates, and happier and more productive staff. The popularity of lean methodologies is growing in healthcare industry. Many companies worldwide have already successfully implemented and adopted the lean methodologies.

2. Study of Literature

It was Toyota with its Toyota Production System, provided the fundamental base of lean thinking which primarily focuses on reduction of waste or in other terms saving resources. (Womack, Jones, & Roos, 1990). Waste can be defined as anything which is more than required and does not add value to product in terms of materials, equipment, parts, time (Russell & Taylor, 1999). Toyota philosophy got an extension in terms of lean management which provides an enterprise wide term combing elements which are process for product development, customer management, policy making. (Holweg, 2007)

The main target of lean has always been to reduce was or *muda*, focusing on individual product and its value stream (Womack & Jones, 1996). The seven types of waste that they defined are over production, higher inventory, defects, inefficient processes, excess transportation, unnecessary motion, and waiting. The first step for any method is to identify problem, in case of lean transition it is to identify value adding and non-value adding processes.

Six Sigma was developed by Bill Smith, a reliability engineer in the 1980's at Motorola (Brady & Allen, 2006).But it was Jack Welch who had observed the success and strongly led the methodology of six sigma in General Electricals (Black, K. & Revere, 2006). Six Sigma is statistical measure of the defective rates in a system. With its statistical approach it defines a structure and systematic way to solve problem aiming at reducing defects to 3.4 for every million opportunities. Six sigma with the help of Deming's PDCA (Plan, Do, Check, Act) cycle brings a frame work to improve process. (Anne´, 2000).

The phrase Lean Six Sigma is used to explain the combination of 2 philosophies i.e. lean and six sigma (Sheridan & John , 2000). Combining lean and six sigma has always been done in isolation (Shingo, 1986) leading to form subcultures in an organization resulting a difference in interest and lot of resource drain (Devore, 2000).

The aim of Integration of lean and six sigma is mainly to target all the opportunities if improvement in an organization. Six Sigma is confined to few individuals of the company as it requires lot of technical knowhow whereas the lean aims at empowering and educating everyone in the organization to locate, reduce, and eliminate non value adding activities. (Kevin , Roger G., & Srilata Zah, 2003)

Implementation of Lean Six sigma takes place in 3 ways in an organization. First being an approach where organization undergoes a change in business approach from traditional method retain its lost customer basis and overcome loses. Second approach is where organization deals in focusing on weaknesses and opportunities among its competitors and own organization. Third one is to solve persisting problems in an organization.Invalid source specified.. The advantages of adopting lean six sigma are that it enhances process of product development, reduction of overall time taken for manufacturing process, lowering project time, costs, data integrity. Invalid source specified.

The objective of the study was:

- To uncover evidence of lean strategies in Sri Sathya Sai Institute of Higher Medical Sciences, Prasanthi Gram.
- To understand better, the functioning of Sri Sathya Sai Institute of Higher Medical Sciences, Prashanti Gram

3. Methodology
The paper follows case study methodology which was formed on the basis of interviews with the key stakeholders of the hospital and direct observation.

4. Sri Sathya Sai Institute of Higher Medical Sciences- Case Study
Sri Sathya Sai Institute of Higher Medical Science is a tertiary healthcare service provider in Puttparthy, a small village in Ananthapur District of Andhra Pradesh, India. The services are provided completely free of cost to all the patients coming into the hospital and is managed by Sri Sathya Sai Central Trust under the umbrella of Sri Sathya Sai Medical Trust.

4.1. Mision Statement
The mission statement of the hospital based on principles formed by the founder which are[1]:

- Universal Healthcare
- Healthcare services for free of cost.
- Healthcare administered with love.
- Aim of treatment is to focus on healing and not only curing.

4.2. History
The history of the hospital dates back to 23 November 1954 with inception of Sri Sathya Sai General Hospital at Puttaparthy. The hospital started having 12 beds serving mainly the local people, people living in neighbouring villages. As demand increased the construction of a new building, equipped with all medical facilities was done in a phase wise.

It was during the birthday celebrations discourse on 23 November 1990, Sai Baba, founder of the hospital and a great spiritual leader announced that a new tertiary care, i.e., super-specialty hospital will be constructed. Sri Sathya Sai Baba while addressing a public gathering declared that within one year the hospital will come up in the village of Puttaparthi, which will provide tertiary care free of cost to everyone coming in.

True to his words, the hospital was inaugurated on 22nd November 1991. The hospital consists of 300 beds and 12 surgical units, five intensive care units, two cardiac cath laboratories, medical and surgical wards and a 24-hour emergency unit.The super specialty hospital continued to expand its surgery by, Ophthalmology department in 1995, the Radiology services in1997. In 1999 the Lithotripsy Centre was opened. The statistical data of patients treated in the hospital since inception is provided in Figure 1.

4.3. Patient Registration
The hospital follows a very systematic way of dealing patients. The patients are allowed to come for consultation between 8 AM to 5 PM on any working day. The patients are sent through screening process after which depending on the necessity they are directed towards specialists. The screening process in the hospital came few years back to improve efficiency of specialists. For example, a patient complains of having chest pain, if he is sent directly to a cardiologist and after tests the results show patient having gastric problem, then it leads to inefficient use of time, resources etc. by the doctor. Rather this problem can be handled by general physician and hence having these doctors and setting up a screening process came into practice.

The patients are given a card once they are registered which has their photo, name, age, place of residence and a bar code on it. This card is mandatory for patient to proceed with further treatment after screening tests and registration. This card is registered by the local department and patient is sent to doctor. The doctor in his system enters the patient's card number and feed all the details, observations. Any tests prescribed are also communicated to the concerned department in the portal. Any department in the hospital

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[1] www.sssihms.org.in

can look into the details of the case just by entering the bar code on the card. This way of work process helps the staff to function faster, and it avoids any kind of errors, communication gaps happening between the staff and patients. (See Figure 2)

4.4. Success Drivers of the Hospital across Departments
One of the unique feature of the hospital is there is no billing section anywhere in the hospital. The hospital carries out all its activities keeping quality care and cost control in top priority says the finance controller of the hospital. For example, the costs of medicine which patients are given (this also for free of cost) which hospital incurs has to be taken care well. It is done by hospital staff directly going to manufacturer or to the dealer. It helps in saving money which is usually given to intermediaries as their charges. This is one of the ways in procuring medicines and dealing with cutting costs. Similarly, an angioplasty surgery which would cost around 2 lakhs to 3 lakhs in any corporate hospitals, the hospital manages to do it with a cost of around Rs. 80,000[2].

The IT departments is considered to be one of strongest pillars of the hospital as per the management. It has developed systems, procedure in a way which facilitates the patients, doctors and management of the hospital to work hand in hand.

The pathology department which handles all the tests done have to undergo some tests in traditional ways. The culturing process have to be done manually. But with new age technology these are set of tests which can be done automatically by the machines available. These are set to calibration everyday apart from random sample checks done to ensure quality and prudence in the testing process.

The hospital revamped its surgical department to ensure that it is compatible to the new age technology which ensure providing best treatment to the patients. The hospital apart from maintaining paper documents wherever necessary and mandatory has moved to maintaining all documents in digital form. It again taking the support of IT department has taken this step to cut down on stationary costs and also making it more environmental friendly, patient friendly. The patient need not bother about collecting his reports and spending time behind collecting them. The hospital takes care of registration, consultation, tests, report formation and maintenance of the reports. The hospital does not maintain any hard copy of x-ray reports, MRI reports etc. unless it is mandatory for documentation. Any document which is more than 10 years old is stored in digital form and the files are kept optional for disposal. The hospital for its data and usage keeps all the data since inception in digital format.

4.5. Customer Relations
The hospital considers giving all the facilities in the hospital for free as a boon. The resources like man power, time, infrastructure etc. which might have spent for maintaining the accounts section if at all payment section was there in hospital is spent for another purposes which are more beneficial to patients says the administration manager of the hospital.

The hospital has an occupancy rate of around 60% throughout the year. The hospital is indeed known for its beautiful infrastructure, ambience, service provided with great care, love and commitment. With number of patients coming into hospital from various parts of country and also from neighbouring countries like Pakistan, Bangladesh the hospital stands strong for its values and services.

Patients were willing to work as they expressed that waiting bears fruit unlike in other organizations where one has to pay charges and wait for long time for his turn. The care and concern shown towards patient by the working staff, management of hospital and doctors hold patients to the hospital.

Patients come to hospital also because of the environmental factors. A patient from West Bengal who was there to undergo surgery related to varicose veins in the department of Plastic surgery shared his thoughts and said the ambience is healthy, pollution free, spiritually inclined which he felt will heal him faster.[3]

The driving factor for the patients coming in from distant places to the hospital located in a remote place having relatively less connectivity were concluded to be the commitment, care and concern shown while treating patients are the key factors which stood as winners for influencing patients. The hospital is highly motivated by the founder and his teachings. The founder preached and lived to his words and built a model which is running successfully for last 24 years.

4.6. Move the Information Not Patients
To ensure the well-being of the patients post operation even in a patient's hometown, the hospital collaborated with ISRO and launches Tele-Medicine services in July 2008. One of the basic ideas of telemedicine can be expressed by the saying: "Move the information, not the patient".The hospital sees a large number of patients coming from the state of Odisha and West Bengal and Hence, Tele-consultation services are based in these states especially for post-operative cardiac patients.

The Sri Sathya Sai Seva[4]Organisation, a NGO which is managed by Sri Sathya Sai Central Trust took the responsibility for setting upcentres in Bhubaneswar (Odisha) and Barrackpore (West Bengal) where patients who have undergone cardiac surgery, come and report for follow-up or with related complaints. Doctors in the center screen the patients and collect essential details like complaints, medicines being currently taken etc. and send them to SSSIHMS, Puttaparthy. The consultant at SSSIHMS reviews the patient's past and current records and while interacting to the patient and the attending physician directly over video-conferencing prescribes suitable remedies and further investigations as needed.

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[2]Direct Information obtained from Finance Head during an interview conducted on 03-Dec-2015.
[3]Oral Interview was held in hospital between 01-Dec-2015 and 05-Dec-2015.
[4]Seva is a word in Hindi, Indian National Language which means service or help provided in any form without seeking anything in return.

The most effective part of the process is that the patient and doctor have conversation directly. Another advantage is that the local doctor conveys the specialist's advice clearly in the patient's local language. The patient also avoids the inconvenience and cost incurred for traveling from their residing place to Puttaparthi, unless it is really necessary.[5]

The hospital has a footfall of around 600 patients per day from various parts of the country. The students, undergoing various diploma courses in the hospital feel that the facilities available for them are far more sophisticated from what they can get anywhere else in the country. They are trained well and with number of patients coming in which enables them to get a lot of scope, chance to learn better. It makes the learning process more rigorous, practical and experiential.

4.7. Quality Control Initiatives

The hospital has never gone for accreditation before, but it is trying for accreditation from National Accreditation Board for Hospital and Healthcare establishments so that it can get certification on the quality standards maintained at hospital and give patients an impression that they are in secured hands said the finance controller of the hospital. The hospital has taken a lot of steps, modified its way of working without compromising on the values, teachings of the founder of hospital. The hospital management has made considerable efforts to bring in more information to the patients by educating them their rights, way of working of hospital, procedure of working of departments through various flow charts, organizational structure, reporting authorities through many displays boards in the hospital. The hospital has a special annex dealing with quality issues in the hospital and also the accreditation process for which hospital has applied.

The hospital in their quality mission have stated that:
- They believe in providing total quality healthcare to their patients with skill and love combined, espousing their founder Sri Sathya Sai Baba's philosophy and personal commitment towards continuous quality improvement.
- Ensuring patient satisfaction by service and dignity and at the same time protecting rights of the patients.
- Providing a safe and conducive work environment for all staff members.
- Fair and transparent process with sound consultative measures.
- Providing and investing on basic and continuous medical education for all staff members.

The management of hospital believes that the accreditation process brings more learning, experience, latest technology into the organization. It ultimately benefits the organization helping the hospital to improve more in terms of treatment, efficiency, educating hospital staff and patients and make ambience healthier, happier and conducive.

It helps the hospital to be inclined with the principles of founder who always encouraged for continuous improvement, commitment towards work, adherence to human values, making work as worship and serving mankind as sole purpose of an individual's life.

The management of the hospital feels that it has its own disadvantages. First one is that the hospital is located in a place which still lacks proper connectivity. Second, is that the hospital does not carry out any kind of promotional activity. The hospital is solely dependent on the funds provided by the Sri Sathya Sai Central Trust, which delay few sanctioning processes.

The factors encouraging Lean strategies at SSSIHMS are:

4.7.1. Time Management

Time is the most valuable resource in service industry. It is one of the most critical thing for being successful and efficient. As it is said time and tide waits for none, in service industry, where services are highly perishable, with each second passing there is an opportunity cost involved. It can either be availed or forgone. SSSIHMS displays a lot of efficiency in time management by following procedures like screening centres at patient registration desk, issuance of barcode enabled cards to patient, on spot diagnostics etc. which makes the treatment processes faster giving opportunity to the hospital to treat more number of patients.

4.7.2. Aid of Information Technology

In the last two decades, India has seen a lot of changes and innovations in the field of technology. Information Technology is standing out to be the back bone of any organization. It facilitates the organization from demand forecasting to integrating various departments across an organization. Making world a small place to work, it has helped organizations to increase the speed of work, provide accurate, error proof and sophisticated services to the patients.

SSSIHMS, uses highly sophisticated technology and equipment like MRI Scanners, Digital X-Rays, and Automated Blood testing tools, which help in diagnosing the problem in a better way ensuring quality. They use programming and sensors to manage power system in the hospital making it largely automatically operational.

SSSIHMS uses Management Information System (MIS) which has integrated all the departments across the hospital. The doctor of any department can access patient's record by feeding the registration number provided to the patient on his registration card. Patient need not carry his reports and other documents of the tests done in the hospital. All the reports are digitalized and made available to doctor as soon as tests are done.It lowers the cost related to stationary, X-Ray, MRI films, and also provides satisfaction to the customer as he need not go around anywhere to collect his reports giving him more comfort and convenience in the hospital.

4.7.3. Customer Satisfaction

Customer Satisfaction can be defined as why customers come to an organization, buy his product. Customer Dissatisfaction can be defined as why customers complain? It has its origin in deficiencies. SSSIHMS stands for providing services imbibing the ideologies

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[5]http://psg.sssihms.org.in/pages/Academics/Telemedicine.htm

of founder in all their activities. They try to develop a bond with each customer coming to them not only asking about them but also about welfare of family, work etc.

Free services are definitely a key success factor for them which attracts most of the patients coming in but when the patient moves out of the hospital they carry beautiful memories and hope to lead a better life.

4.7.4. Cost Effectiveness and Quality in Processes and Management

The working model of SSSIHMS is unique. Health care is provided completely free of cost. Hence they have to minimize cost at every possible step. The management of hospital directly goes to the manufacturer and gets required stock at a lower price. It eliminates the intermediary costs. The hospital manage costs related to overheads and try to minimize them. As mentioned earlier in the case heart surgery which is billed at around Rs. 2lakh to Rs. 3 lakhs in any corporate hospital, these hospitals manage to them at a cost of around Rs. 80,000. It is possible because of the direct relationship with the suppliers and dealers.

4.7.5. Employee Motivation

Employees are motivated mostly by the money in corporate hospitals but when it comes to NGO's providing services, it is pleasure and sense of fulfilment which drives an individual to carry his work. Employees at SSSIHMS derive motivation from the ideologies, principles of the founder. Though money is also a criterion for them to remain on job it is the sense of happiness and pleasure of serving people binds them to the organization.

5. Conclusion

Indian Health Care sector is growing at a tremendous pace giving a lot of scope for up gradation, innovation in establishments. This case gives an idea of how SSSIHMS is showing interest in adopting new age methods and technology to give better services to people at large.

The key findings of this study is that integrating the services across an organization proves to be more efficient and effective. It is not only important that an organization provide services but to sustain in future, it has to deliver services by adopting new models of work. This helps management in ensuring faster treatment, waste reduction in terms of money, and time.

Information Technology is playing a key role in bringing a huge change by helping organizations to innovate new methods of treatment and dealing with day to day operation in an organization. Its presence can be felt in the organizations from registration point to report delivery and also at surgical process and post-surgery. It increases the efficiency of treatment ensuring accuracy and conformance to quality.

The management of SSSIHMS has adopted method of procuring stock directly from the dealers which eliminates intermediary costs which again ensures quality as there is personal interest shown in the activity. To ensure that there is sustained development and improvement both in customers and organization, continuous educational programs and training are conducted. It reinforces the learning in the minds of people.

For any organization, it very essential that they reduce waste and use resources efficiently. These practices fall under the lean practices or lean thinking of management. Departments across the hospital work together and employees are highly motivated to satisfy patients and themselves. It all forms part of a single term called "continuous improvement" which is the only success mantra for any organization to sustain in long run.
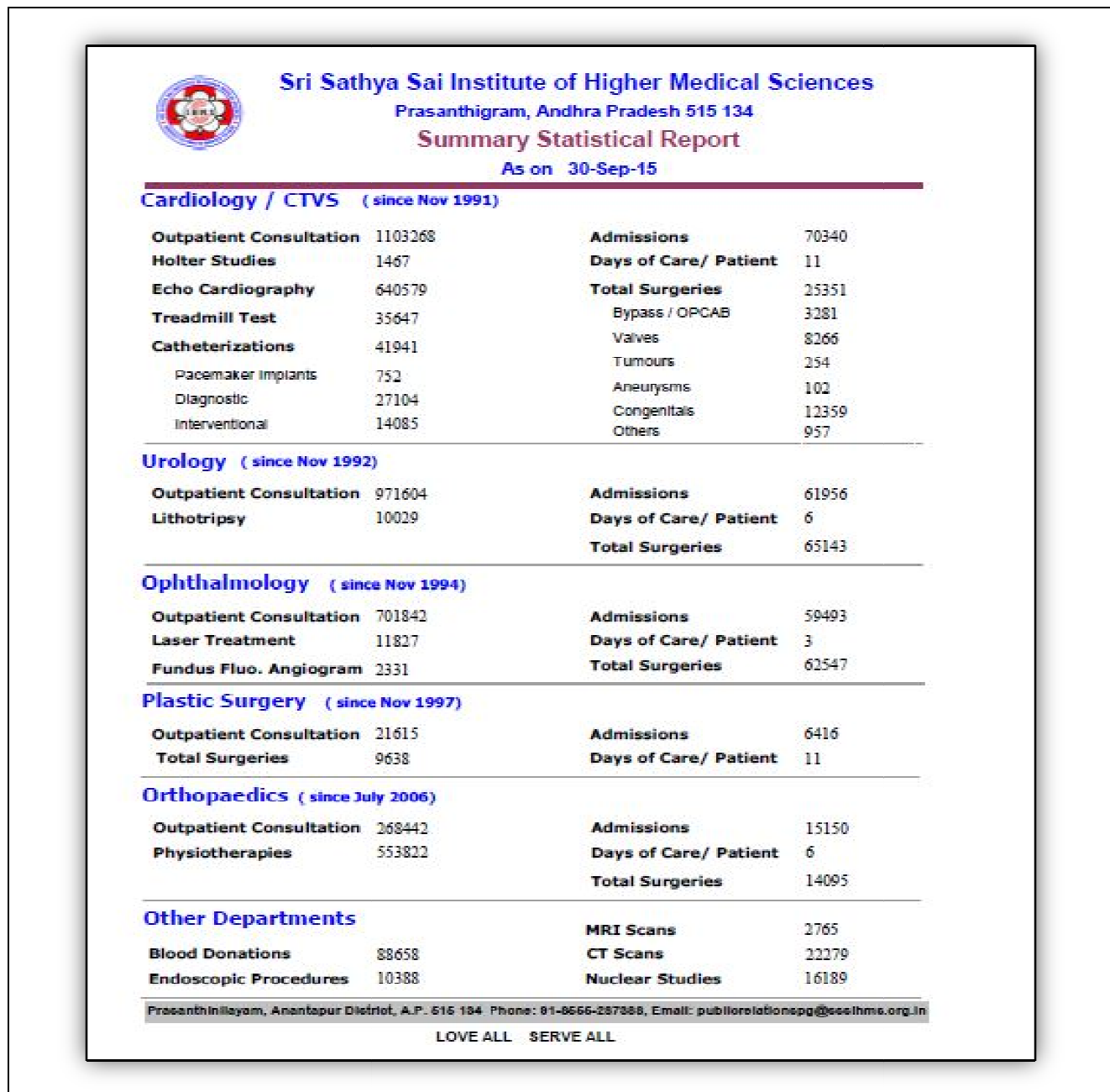
Figure 1: Statistical report of patients treated in SSSIHMS
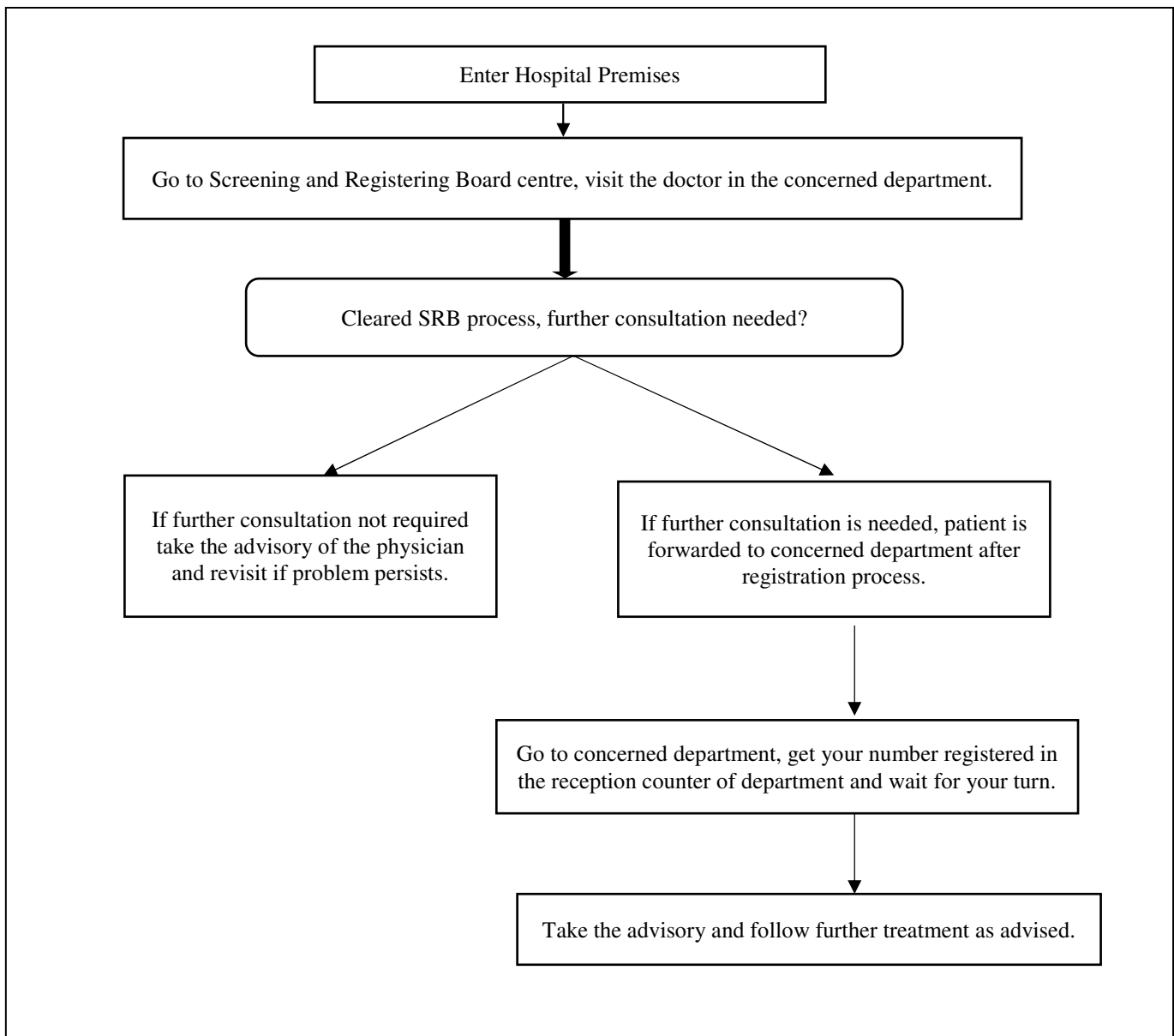*Source (:http://psg.sssihms.org.in/Attachments/Statistics-till-sept-2015.pdf, n.d.)*

Enter Hospital Premises

Go to Screening and Registering Board centre, visit the doctor in the concerned department.

Cleared SRB process, further consultation needed?

If further consultation not required take the advisory of the physician and revisit if problem persists.

If further consultation is needed, patient is forwarded to concerned department after registration process.

Go to concerned department, get your number registered in the reception counter of department and wait for your turn.

Take the advisory and follow further treatment as advised.

Figure 2: Flow Chart depicting in brief the patient's consultation process in the hospital

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