

A Study Of Quality Management System In Laboratory Services In A Selected Corporate Hospital

Vipin Mishra^{1*}, Dr. Nikita Dholakia²

^{1*}Research Scholar, Shri Rawatpura Sarkar University, Raipur, CG

²Associate Professor, Shri Rawatpura Sarkar University, Raipur, CG

Citation: Vipin Mishra, et.al, (2023), A Study Of Quality Management System In Laboratory Services In A Selected Corporate Hospital, *Educational Administration: Theory and Practice*, 29(4), 2202-2212 Doi: 10.53555/kuey.v29i4.7002

ARTICLE INFO

ABSTRACT

This study aims to assess the quality management system in the laboratory of a selected hospital. The data was collected from 10 doctors, 10 nurses, 10 laboratory personnel, and 40 patients. The obtained data has been classified and analyzed based on the objectives of the study in the form of diagrams and tables. The results show that 90% of the doctors say they have adequate staff in the laboratory, 100% of them say the quality manager establishes and maintains the process, and specimens are collected in appropriate containers, in appropriate condition, and transported at appropriate time, without any contamination during receiving with doctors written order, 90% of them said there was no complaints from doctors regarding reports, 100% said there is continuous quality improvement carried out in the laboratory and quarterly audit is carried out as per the NABL standards. The patients were moderately satisfied with the fees charged for the laboratory tests and waiting in queue to collect reports, 50% of patients said that fees charged for laboratory tests were affordable. It was found that a very good existing delivery system of service at the laboratory quality is followed in this hospital.

INTRODUCTION

Today's health care customers are much more demanding that their requirements be taken up into considerations. Those health care organizations that do not respond to the requirements of customers may find their ability to compete significantly compromised. Quality systems in healthcare organizations are evolving. The seemingly contradictory pressures for both cost reduction and quality improvements require that healthcare organizations adopt new systems for managing quality. When faced with these same pressures, other industries implemented so-called – Total Quality Management, or TQM. Total Quality Management is a proactive approach to quality assurance that focuses on the continuous improvement of quality and reduction of wasteful resource expenditures.

Quality Management System program developed to support efficient and effective, high quality and appropriate laboratory services (E.g. accurate and precise results, appropriate test selection, timely reporting, correct interpretation of results, clinical usefulness, and appropriate recommendations for further tests). Comprehensive and coordinated efforts (policies, processes, and procedures) designed to meet quality objectives, to direct and control an organization concerning quality. Encompasses quality (management) systems, quality assurance, and quality control.

Achieving quality control in a medical laboratory requires the use of many tools. These include procedures, manuals, maintenance schedules, calibrations, quality assurance programs, training, and quality control. Quality control in the medical laboratory is a statistical process used to monitor and evaluate the analytical process, which produces the patient results. The statistical process requires regular testing of quality control products along with the patient samples, and comparison of quality control results to specific statistical limits. When a diagnostic test is performed in a laboratory, the result may be a patient result or it may be a quality control result. The result may be quantitative, qualitative, and semi-quantitative. Due to the spiraling cost of medical care, increasing sophistication in diagnosis, recent advances in the treatment of disease, decreased resources, and increased competition, many hospitals are under pressure to cut down their costs while improving the quality of care. The total quality philosophy encourages quality through the prevention of errors and better design of the system. This reduces waste and leads to improved productivity, which in turn reduces cost and provides a competitive advantage.

The diagnostic team comes into direct contact with the patients to some extent. More importantly, they help

the therapeutic team in providing quality care. They have to see that everything is done right everywhere. Moreover, the quality management of laboratory services is important as the revenue generated by it is quite significant to the total revenue of the hospital and most of the inpatients and outpatients undergo laboratory investigation. The evaluation process provides administrators with the information needed for the management process. It also helps healthcare professionals to determine whether they are providing appropriate and quality services effectively and efficiently.

Table: 1.1 Showing The Lab Testing Processes And Their Potential Errors

| Process | Potential Errors |
|------------------------|--|
| Test ordering | Inappropriate test Handwriting not legible Wrong patient identification Special requirements not specified Cost or delayed order |
| Specimen acquisition | Incorrect tube or container Incorrect patient identification Inadequate volume Invalid specimen(e.g.: hemolyzed or too dilute) Collected at the wrong time Improper transport conditions |
| Analytical measurement | The instrument not calibrated correctly Specimen mix-up Incorrect volume of specimen Interfering substance present Instrument precision problem |
| Test reporting | Wrong patient identification Report not posted in chart Report not legible Report delayed Transcription error |
| Test interpretation | Interfering substances not recognized Specificity of test not understood Precision limitations not recognized Analytical sensitivity, not appropriate Previous values not available for comparison |

CUSTOMER SATISFACTION

Delighted customers¹ are those whose expectations have not just been met, but have been exceeded.²⁸ In Sherden's opinion what distinguishes many leaders in hospital service quality is that they anticipate patient's expectations, and then develop health care that will surpass them.²⁹ Recent studies by Cronin and Taylor have shown that high levels of service quality positively influence customer satisfaction. The literature suggests that sustainable competitive advantage for service organizations, such as those in the healthcare industry, is best attained through service quality and customer satisfaction.³⁰ The primary theme of the expected versus perceived view stated by Saunders et. al. is that customer satisfaction or dissatisfaction is a function of the disconfirmation arising from discrepancies between prior expectations and actual performance. In a hospital setting, expectations are the desires or wants of patients. They are the utilities that patients think should be offered.³¹

Customer satisfaction or delights - The customer satisfaction or delight model by Eherman shown in the figure shows the progression of elements that lead to customer delight.

Basic Customer Expectations: They are the –must-haves!. The customer expects the product or service to have these basic features or attributes. The customers may not even mention them. It means the customers are just assuming you will handle them. E.g. Cleanliness, waiting time.

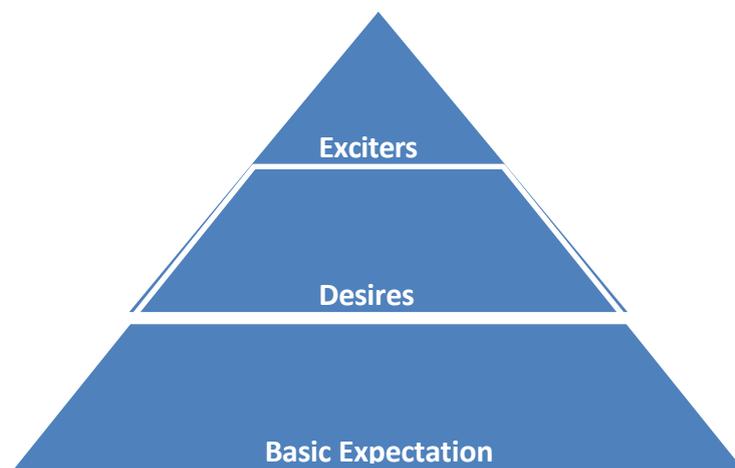


Figure:1.1

The customer satisfaction/delight model

Customer Desires: These are those product or service attributes that are nice to have, but not necessarily required. Customers are likely to have a positive recollection of their experience with an organization that understands and satisfies their desires in addition to their basic expectations. E.g. Courtesy, Respect, Understanding needs, **Customer Exciters:** Pleasant surprises or unexpected features can often convert a satisfied customer to one who is delighted. E.g. whenever the author uses the drive-through window at his bank and his sons are along, the friendly teller sends the boys something.³²

Patient-Focused Care

Implementation of patient-focused care is considered a –rationall strategic choice by Myers. According to him; it decreases the cost of providing health care while increasing the quality of services. The commonly accepted description of PFC is a model that –seeks to integrate the organization's values and culture with the operational excellence vision and processes to transform the institution into a customer-focused organizationl. Staff satisfaction is attained by encouraging staff to plan and execute their clinical work in ways that are most responsive to patient needs. Patients spend a substantial amount of time in clinics waiting for services to be delivered by nursing and other allied health professionals. Rondeau states that the degree to which health consumers are satisfied with the care received is strongly related to the quality of the wait experience. According to him, health care organizations that strive to deliver exceptional service must effectively manage their clinic wait. Failure to incorporate consumer-driven features into the design of the wait experience will lead to patient and provider dissatisfaction.³³

The expectations of the customers should be found out and compared with the present performance. The laboratory should try to fulfill the customer desires and introduce customer exciters to convert a satisfied customer to one who is delighted.

Due to the diverse nature of day-to-day activities, the large number of variables, and subjectivity, results are difficult to measure in hospital services. By this very nature, a great part of hospital output will always be intangible. Therefore, the measurement of tangible and intangible outcomes must go hand in hand and water-light compartmentalization can be made between them. Because of this, the evaluation process has greatly depended upon qualitative judgments in addition to quantified data in most instances.¹

The way to bridge the gap between institutions' and patients' perceptions of quality care lies in valuing the interactions that patients consider quality care and including these interactions in measures of quality care. Since the very nature of the hospital output will always be intangible the evaluation process will greatly depend on qualitative judgment in addition to quantified data.³⁴

OBJECTIVE OF THE STUDY

1. To evaluate the present delivery system of service at the laboratory concerning quality.
2. To determine the factors which ensure the quality of services delivered.

RESEARCH OBJECTIVES AND METHODOLOGY

This chapter deals with the methodology adopted in the study, the details of which are discussed below. Research is the systematic method consisting of enacting the problem, formulating a hypothesis, collecting the facts or data analyzing the facts, and reaching a certain conclusion either in the form of solutions to the concerned problem. The methodology involves a series of a step that describes the path of study that systematically begins with the statement of the problem and concludes with the limitations of the study.

A) Statement of problem: A study of Quality Management Systems in laboratory services in selected hospitals.

B) Scope of the study: Quality Management System-A program developed to support efficient and effective, high quality and appropriate laboratory services (E.g. accurate and precise results, appropriate test selection, timely reporting, correct interpretation of results, clinical usefulness, and appropriate recommendations for further tests). Comprehensive and coordinated efforts (policies, processes, and procedures) designed to meet quality objectives, to direct and control an organization about quality. Encompasses quality (management) systems, quality assurance, and quality control.

Achieving quality control in a medical laboratory requires the use of many tools. These include procedures, manuals, maintenance schedules, calibrations, a quality assurance program, training, and quality control. Quality control in the medical laboratory is a statistical process used to monitor and evaluate the analytical process, which produces the patient results. The statistical process requires regular testing of quality control products along with the patient samples, and comparison of quality control results to specific statistical limits. When a diagnostic test is performed in a laboratory, the result may be a patient result or it may be a quality control result. The result may be quantitative, qualitative, and semi-quantitative. Due to the spiraling cost of medical care, increasing sophistication in diagnosis, recent advances in the treatment of disease, decreased resources, and increased competition, many hospitals are under pressure to cut down their costs

while improving the quality of care. The total quality philosophy encourages quality through the prevention of errors and better design of the system. This reduces waste and leads to improved productivity, which in turn reduces cost and provides a competitive advantage.

The diagnostic team comes into direct contact with the patients to some extent. More importantly, they help the therapeutic team in providing quality care. They have to see that everything is done right everywhere. Moreover, the quality management of laboratory services is important as the revenue generated by it is quite significant to the total revenue of the hospital and most of the inpatients and outpatients undergo laboratory investigation. The evaluation process provides administrators with the information needed for the management process. It also helps healthcare professionals to determine whether they are providing appropriate and quality services effectively and efficiently.

C) Research approach:

The research approach in this study is the Descriptive Method. It includes the collection of information opinions and attitudes directly from the subjects of the study through structured informal questionnaire schedules and open-ended questions.

D) Method of data collection:

The primary source of data is collected with the use of a structured informal questionnaire method from doctors, nurses, laboratory personnel, and patients and an observational checklist.

The secondary source of data is collected from the Quality manual, records maintained in the laboratory department, official publications, journals and magazines, etc.

The population consists of Doctors, Nurses, Laboratory personnel, and Patients. The data has been collected from 10 doctors, 10 nurses, 10 laboratory personnel, and 40 patients.

Data was analyzed based on the objective of the study. The analyzed data is presented in the form of diagrams and tables.

E) Limitation of the study:

1. Lack of sincerity on the part of the staff while answering the questions.
2. The study has been conducted only in one hospital.
3. Subjects included in this study were only those who were willing to participate.
4. Time horizon was one of the limitations of the study.

DATA ANALYSIS

The obtained data has been classified and analyzed based on the objectives of the study in the form of diagrams and tables.

Part – A: Response of doctors.

| Information given | Yes | No |
|---|------------|-----------|
| Charges informed | 80% | 20% |
| Timings informed | 80% | 20% |
| Periodical information given | 60% | 40% |
| Lab turnaround time meets the need | 50% | 50% |
| Time taken for delivery of reports | Yes | No |
| Minimum time | 30% | 70% |
| Maximum time | 70% | 30% |
| Delays unduly | 40% | 60% |
| Not delivered till enquired | 30% | 70% |
| Efficacy of lab reports | Yes | No |
| Results are quantified | 100% | 0% |
| Filled in order | 100% | 0% |
| Patient profile entered correctly | 90% | 10% |
| Easy to understand | 90% | 10% |
| Efficiency of lab reports | Yes | No |
| Specimen collection process acceptable to patient | 80% | 20% |
| Request form easy to use | 90% | 10% |
| Lab transportation system meets the needs | 80% | 20% |
| Customer service response good | 70% | 30% |
| Lab report delivery system meets the needs | 60% | 40% |
| Validity of lab reports | Yes | No |
| Co-relates with clinical diagnosis | 100% | 0% |

| | | |
|--|------|----|
| Different samples of the same specimen show the same value | 100% | 0% |
| The same specimen shows the same value, as that of another standard laboratory | 100% | 0% |

- Table shows that 80% of the doctors say that charges and timings of the tests are informed 60% of them say periodical information about the test is given and 50% of the doctors feel lab turnaround time meets their needs.
- 30% of the doctors say that it takes minimum time to deliver reports, 70% of them say it takes maximum time, 40% of them say there is delay unduly in delivering reports and 30% of the doctors say they won't deliver the reports till enquired.
- 100% of the doctors say that results are quantified and filled in order, and 90% of them say that patient profiles are correctly entered in the lab reports and are easy to understand.
- 80% of the doctors say that the specimen collection process is acceptable to their patient, 90% of them say the Lab investigation request form is easy to use, 80% of them say the lab transportation system meets their needs, 70% of them say the customer service response is good and 60% of them say lab report delivery system their needs.
- 100% of the doctors say that results co-relate with clinical diagnosis, different samples of the same specimen show same value and the same specimen shows the same value of reports of another standard laboratory.

Part – B: Response of the nurses.

| Information about specimen collection and transportation | Yes | No |
|--|-----------------------|-----|
| Information given about the method of collection and transportation of specimen | 70% | 30% |
| Procedure manuals provided | 100% | 0% |
| Explain some methods for specimen collection | 80% | 20% |
| Lab personnel come to collect specimens from IPD/OPD | 20% | 80% |
| Provide training regarding the method of collection and transportation of specimen | 100% | 0% |
| Explain about safety measures while collecting specimen | 70% | 30% |
| Information about patient consent and identification | Yes | No |
| Consent appropriately collected | 100% | 0% |
| Maintain patient identification accurate | 100% | 0% |
| Time taken to hand over the specimen | % of nurse respondent | |
| 0-5 min | 65% | |
| 6-10min | 10% | |
| 11-15min | 20% | |
| >15min | 5% | |
| Behavior of lab personnel | % of nurse respondent | |
| Courteous | 60% | |
| Understands need | 20% | |
| Provides good response | 20% | |
| Harsh | 0% | |
| Cleanliness of the lab | % of nurse respondent | |
| Surroundings are littered | 20% | |
| Articles are properly cleaned | 80% | |
| Articles are properly arranged | 70% | |
| Lab personnel washes hands after handling each patient | 70% | |
| Nurses | Yes | No |
| Job rotation | 100% | 0% |

- Above table shows that 70% of the nurses say that lab personnel gives information regarding methods of specimen collection & transportation, 100% of them say procedure manuals are provided, 80% of them say some methods for specimen collection are explained and 20% of them say lab personnel comes to IPD/OPD to collect specimen when required, 100% of them say they provide training regarding method of collection and transportation of specimen and 70% say they explain about safety measures that should be observed while collecting samples.

- 100% of the nurses say that patient consent is collected accurately and they also maintain patient identification accurately.
- 65% of the nurses say that 0-5 min waiting time, 10% say 6-10 min waiting time, 20 % say 11-15 min waiting time and 5% say > 15 min waiting time for handing over the specimen.
- 60% of the nurses say that the behavior of the lab personnel is courteous, while 20% say they understand the need, and 20% say they provide a good response.
- 20% of the nurses say that surroundings are littered in the laboratory, 80% of them say articles are properly cleaned, 70% of them say articles are properly arranged and lab personnel washes hands after handling each patient. (Data presented for each attribute is out of 10).
- 100% of the nurses say that they have job rotation.

Part – C: Response of Laboratory personnel

| Attributes of quality | Yes | No |
|---|------------|-----------|
| The quality manager establishes & maintains the process | 100% | 0% |
| Laboratory accidents take place during the process | 0% | 100% |
| Adequate staff | 90% | 10% |
| Physician written order with every specimen | 100% | 0% |
| Specimen collected in an appropriate container | 100% | 0% |
| Specimen collected and transported in appropriate time | 100% | 0% |
| Specimen was stored in the appropriate condition | 100% | 0% |
| Specimen was without any contamination while receiving | 100% | 0% |
| Any complaints regarding reports from doctors | 90% | 10% |
| Quality Management Team and its action | Yes | No |
| Lab has the quality management team | 0% | 100% |
| CQI carried out in the lab | 100% | 0% |

- Table above shows that 100% of the lab personnel say that the quality manager establishes and maintains the process, there are no laboratory accidents during the process, 90% of them say that they have adequate staff in the laboratory, 100% of them say specimen was collected in an appropriate container and appropriate condition and transported in appropriate time, without any contamination during receiving with doctors written order. 90% of them say there were no complaints from doctors regarding reports.
- 100% of the lab personnel say that the laboratory doesn't have a quality management team separately and there is continuous quality improvement carried out in the laboratory.

Part – D: Response of patients

| Attributes of Quality in Laboratory | Yes | No |
|--|-------------------|-----------|
| Easily accessible | 80% | 20% |
| Fully furnished | 100% | 0% |
| Cleanliness maintained | 100% | 0% |
| Have proper waiting area | 100% | 0% |
| Have proper seating arrangement | 100% | 0% |
| Proper sign boards provided | 80% | 20% |
| Separate toilets for gents and ladies | 100% | 0% |
| Spate room for specimen collection | 100% | 0% |
| Behavior of lab personnel | Percentage | |
| Courteous | 60% | |
| Shows good response | 30% | |
| Caring | 10% | |
| Communication by lab personnel | Percentage | |
| Patient preparation for specimen collection | 70% | |
| Procedures to be followed by patient | 30% | |
| After effects | 0% | |
| Technical procedures | 0% | |
| Procedures used for infection control | Percentage | |
| Uses gloves while drawing/collecting specimen | 100% | |
| Use disposable syringes | 100% | |
| Cleans the area of blood collection with spirit swab | 100% | |
| Wash hands after handling each patient | 100% | |
| Time for enquiry | Percentage | |
| 0-5 min | 10% | |
| 6-10 min | 70% | |

| | | |
|--|-------------------|-----------|
| 11-15min | 20% | |
| >15min | 0% | |
| Time for sample collection | Percentage | |
| 0-10 min | 10% | |
| 11-20 min | 70% | |
| 21-30min | 20% | |
| >30min | 0% | |
| Waiting time at cash counter | Percentage | |
| 0-10 min | 70% | |
| 11-20 min | 20% | |
| 21-30min | 10% | |
| >30min | 0% | |
| Fees charged for test | Yes | No |
| Affordable | 50% | 50% |
| Reports on time | Percentage | |
| Yes | 80% | |
| No | 20% | |
| Waiting time in queue for lab reports | Percentage | |
| 0-5 min | 60% | |
| 6-10 min | 20% | |
| 11-15min | 20% | |
| >15min | 0% | |
| Response | Percentage | |
| Very good | 20% | |
| Good | 75% | |
| Bad | 5% | |
| Very bad | 0% | |

- As per the above table 80% of the patients say that proper sign boards were provided and the laboratory is easily accessible. 100% of the patients say that cleanliness is maintained in the laboratory and is fully furnished, with a proper waiting area, proper seating arrangement, separate toilets for gents & ladies, and a separate room for specimen collection.
- 60% of the patients say that the behavior of the lab personnel was courteous, 30% say they showed good response, and 10% say it was caring.
- 70% of the patients say that patient preparation for specimen collection was explained and 50% of them say procedures to be followed by patients were explained. (Data presented for each attribute is out of 10.)
- 100% of the patients say that to control infection lab personnel use gloves, use disposable syringes, clean the area of blood collection with a spirit swab, and wash their hands after handling each patient. (Data presented for each attribute is out of 10.)
- 10% of the patients say that waiting time for the inquiry was 0-5min, 70% say it was 6-10 min, and 20% say it was 11- 15 min.
- 10% of the patients say that the waiting time for sample collection was 0-10min, 70% say it was 11-20 min, and 20% say it was 21-30 min.
- 70% of the patients say that waiting time at the cash counter was 0-10min, 20% say it was 11-20 min, and 10% say it was 21- 30 min.
- 50% of the patients say that the fees charged for the laboratory tests were affordable.
- 80% of the patients say that they got reports on time as mentioned by laboratory personnel.
- 60% of the patients say that waiting time in queue for collecting reports was 0-5min, 20% say it was 6-10 min, and 20% say it was 11- 15 min.
- 20% of the patients say that the overall performance of the laboratory service was very good, 75% say it is good and 5% say it is bad.

DISCUSSION

Today's healthcare customers are much more demanding that their requirements be taken up into consideration. Those healthcare organizations that do not respond to the requirements of customers may find their ability to compete significantly compromised. Quality is the satisfaction of the needs and expectations of users or customers. The ultimate aim of quality is –zero defects!. It is unthinkable to compromise even with a fraction of the defect in medical care. All the functions must be carried out so that they are done right at the first time. In medical care there may not be a second time or the effects of not having done it right at the first time can be disastrous.³⁶

Due to the spiraling cost of medical care, increasing sophistication in diagnosis, recent advances in the

treatment of disease, decreased resources, and increased competition, many hospitals are under pressure to cut down their cost while improving the quality of care. The total quality philosophy encourages quality through the prevention of errors and better design of the system. This reduces waste and leads to improved productivity, which in turn reduces cost and provides a competitive advantage.

The diagnostic team comes into direct contact with the patients to some extent. More importantly, they help the therapeutic team in providing quality care. They have to see that everything is done right everywhere. Moreover, the quality management of laboratory services is important as the revenue generated by it is quite significant to the total revenue of the hospital and most of the inpatients and outpatients undergo laboratory investigation.

This study shows the result of the quality management system in the laboratory of a selected hospital. The interpretation of data was done in two parts based on the objectives of the study.

Part 1: The following are the interpretations deduced after a detailed analysis of the primary data related to the present delivery system of services of the lab concerning quality.

Response of Doctors.

The data shows that the doctors were satisfied with the information provided by the laboratory personnel about the charges and timing of the tests, 80% of the doctors say that they are getting adequate information at the right time, 60% of the doctors said laboratory personnel gives periodic information if any revision is done. The doctors were moderately satisfied turnaround time; as only 50% of the doctors said that it meets their needs. The doctors were also satisfied with the efficacy, efficiency, and validity of the reports 90% of the doctors were satisfied with the efficacy, 85% of the doctors were satisfied with the efficiency, and 100% of doctors were satisfied with the validity of the laboratory reports.

The doctors were not satisfied with the time taken to deliver the reports, 70% of them say it takes maximum time, 40% say there is a delay unduly, and 30% say they won't deliver reports till enquired.

The majority of the doctors are satisfied with the information given by the laboratory personnel at the right time, efficacy, efficiency and validity of the reports. The doctors' in general are of opinion that the quality management in laboratories is satisfactory, other than the time taken for the delivery of reports.

Response of Nurses

The data shows that the nurses were satisfied with the information given by the laboratory personnel regarding specimen collection and transportation, 70% of the nurses say that laboratory personnel gave information about specimen collection and transportation and about safety measures that should be observed while collecting samples. 100% of the nurses say procedure manuals are provided and periodic training about methods of collection and transportation of specimen is given.

The nurses were moderately satisfied with the timings for handing over specimen, only 65% of the nurses said that it was less than 5 minutes. The nurses were highly satisfied with the cleanliness and behavior of the laboratory personnel, 80% of the nurses said that articles were properly arranged in the laboratory, 70% of the nurses said that articles were arranged properly and lab personnel washed hands after handling each patient. 60% of the nurses said the behavior of the lab personnel was 60% courteous, 20% said they understood the needs and provided the good response.

The majority of the nurses were satisfied with the information provided by the laboratory personnel regarding specimen collection, transportation and safety measures to be followed during specimen collection, training provided, the behavior of the laboratory personnel, and the time taken to hand over the specimen. Thus the nurses in general are content with the quality management in laboratories.

Response of Laboratory Personnel

The data shows that the lab personnel was highly satisfied with the quality management in the laboratory, 90% of them say they have adequate staff in the laboratory, 100% of them say the quality manager establishes and maintains the process, there are no laboratory accidents during the process, the specimen is collected in an appropriate container, in appropriate condition and transported in appropriate time, without any contamination during receiving with doctors written order, 90% of them said there were no complaints from doctors regarding reports, 100% of them said there is continuous quality improvement carried out in the laboratory and quarterly audit is carried out as per the NABL standards. The majority of lab personnel are satisfied with the method of specimen collection and transportation, continuous quality improvement in the laboratory and even there are no accidents reported. Thus the laboratory personnel' in general are pleased with the quality management in laboratories.

Response of Patients

The data shows that the patients were highly satisfied with the attributes of quality maintained in the laboratory, behavior of the laboratory personnel, and infection control in the laboratory, 80% of the patients said that proper sign boards are provided and the laboratory is easily accessible, 100% of the patient said that cleanliness was maintained in the laboratory and is fully furnished, with proper seating arrangements, separate toilets for gents and ladies, and a separate room for specimen collection. 60% of them said the behavior of the lab personnel was courteous, 30% of them said they understood the needs and showed good

2response, and 10% of them said they were caring. 100% of them said that there is infection control in the lab, lab personnel used gloves, and disposable syringes, cleaned the area of blood collection with spirit swabs, and wash hands after handling each patient.

The patients were satisfied with the communication by the laboratory personnel, waiting time at the cash counter and delivery of the laboratory reports, 70% of the patients said that patient preparation for specimen collection and procedure to be followed by the patient was explained. 70% of them said waiting time at cash counter was less than 10 minutes. The patients were moderately satisfied with the fees charged for the laboratory tests and waiting in queue for collecting reports, 50% of patients said that fees charged for laboratory tests were affordable. 60% of them said waiting time in queue for collecting reports was less than 5 minutes. The patients were not satisfied with the waiting time for inquiry and for sample collection, 70% of patients said the waiting time for inquiry was 5-10 minutes, and the waiting time for sample collection was 10-20 minutes.

The patients were satisfied with the overall performance of the laboratory services, 75% of the patients said that overall performance was good.

The majority of the patients are satisfied with the physical facilities, communication, and behavior of the lab personnel, cleanliness, time for collecting reports, and infection control in the laboratory. Thus the patients in general believe that the quality service provided by the laboratory is satisfactory.

Part 2: The following are the interpretations deduced after a detailed analysis of the data related to the factors that affect the quality of service delivery.

The laboratory has established a quality control program for monitoring the validity of tests. Mistake proofing of activities especially in the areas of sampling, test requests, actual tests, and making reports are initiated by the lab through continual improvement. Verification of the test request at various levels is adopted by the lab to eliminate errors in test request, testing, and test reporting stages.

The quality control procedures are explained to the lab personnel and necessary documents are provided to them in this regard. The Internal quality control program is monitored at different intervals every day and documented.

Sources that contribute to the uncertainty of test results are identified. The quantitative tests are evaluated in terms of accuracy status and are monitored as per defined frequency and also at the end of the month and yearly once. The results of inter-laboratory comparisons, and external Quality Control are reviewed periodically. The calibration procedure is followed as per declared frequency. The precision check of the instrument is evaluated. Necessary preventive actions are taken to minimize the uncertainty of the test. Performance tests are conducted at defined intervals for manual procedures.

The lab has defined and is practicing a system of calibrating its measuring and test equipment. The methods employed to ensure the quality tests, as applicable, are

- a. Regular use of certified reference materials for calibration.
- b. Internal Quality Control program, External Quality Assessment Scheme, Participation in inter-laboratory comparison.
- c. Calibration by another method/ instrument/ or Replicate tests using the same or different methods.
- d. Retesting of retained items and comparing with another standard method whenever necessary.
- e. Retesting in dilution for those tests which are beyond the linearity range. Lab conducts tests using only standard methods which are established ones accepted by referring doctors.
- f. The lab has obtained the traceability certificate from the manufacturers for calibrators and standards which are traceable to international standards.

Regular training programs are undertaken for staff to update their knowledge/skill. Updating of knowledge/information of lab doctors is through continuing medical education programs, conferences, and seminars.

The lab participates in inter-laboratory comparison through external quality control programs. The results of these external quality control programs are monitored and as and when required corrective and preventive actions are taken. In some cases, samples are shared with other laboratories for inter-laboratory comparison. Necessary corrective actions are taken to improve the quality arising out of these comparisons. Where the lab has more than one procedure for a test, say, manual and machine, the results are compared for correctness. These tests are evaluated for comparability at intervals. In this activity, records are maintained and identified problems are attended with records for corrective actions taken. Results are recorded and reviewed by the Quality manager/sectional in-charges and appropriate action is to improve the results. The same is discussed in the Management Review Meeting also. The medical audit is conducted quarterly.

FINDINGS

This study was conducted in BGS Global Hospital. The study focused on the present system of delivery of service at the laboratory with regard to quality and to determine the factors that ensure the quality of services delivered.

The quality measures have helped in the improvement of the laboratory services. The quality measures are

being constantly reviewed from time to time which results in excellent services. According to this study, it was found that most of the doctors are satisfied with the quality standards that the laboratory is currently following. The laboratory service is as per the standards of NABL.

The nurses' in general were content with the quality management in laboratories. They were getting adequate information and follow-up from the laboratory

In this study, it was found that the laboratory is strictly following the standards given by NABL. All the personnel in the laboratory follow the policies and procedures set by the hospital following the NABL standards. The existing quality system in the laboratory is up to the mark of the level of the standard.

The patients' in general opine that the quality of service provided by the laboratory is good.

SUGGESTIONS

Based on the present study, the following suggestions are made to ensure the quality of delivery of services at the laboratory of BGS Global Hospital:

- Should concentrate more on the satisfaction of internal customers by reducing the time taken for delivering reports.
- The number of counters in the reception should be increased to reduce waiting time for inquiry and sample collection.
- Billing for lab investigation should be done in the laboratory.
- Regular preventive maintenance of all equipment should be done.
- The part of the quality manual dealing with specimen collection and transportation should be circulated in the wards.
- Proper signage in English as well as in Kannada should be there.

CONCLUSION

The hospital laboratory service is changing very rapidly. Automation and newer techniques have created a dramatic and challenging environment in hospital diagnostic services. The vital is the quality of care that patients receive should be of the highest possible standard, and also that the clinical laboratories providing that care should be independently capable when it comes to working out how best to maintain those standards and how best to respond to any challenges which will inevitably come along. It was found that a very good existing delivery system of service at the laboratory quality is followed in this hospital. The doctors, nurses, and all the customers of the laboratory are satisfied with the service of the laboratory.

FUTURE DIRECTION OF STUDY

Based on the present study the following future directions are made:

- An exploratory study can be conducted to identify attributes of customers regarding laboratory services.
- A study can be conducted to evaluate the quality of specimen collection and transportation using the observation method.

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