



INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation

Journal Home Page: www.ijrps.com

Financial strategic impact on clinical laboratory managers - A review

Sai Sudha Mahajan¹, Pratibha Ramani^{*2}¹Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India²Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

Article History:

Received on: 01 Nov 2020
 Revised on: 01 Dec 2020
 Accepted on: 10 Dec 2020

Keywords:

Clinical laboratory,
 Lab tests,
 Workload-based costing

ABSTRACT

The cost of operating a clinical lab where cost containment remains a major challenge is to be maintained in conjunction with smooth running of laboratory operations. This study aimed to account the results of service cost using workload-based costing in clinical laboratories. The review aimed at establishing cost containment strategies of all lab test services based on workload of the technical team in a clinical lab. Articles were searched in online databases, such as PUBMED, MEDLINE and Google scholar using keywords "financial, strategic, impact, clinical laboratory, managers." Manual Search of Journals were also done. Articles were reviewed and analysed. The relevant articles were reviewed which showed the value analysis of lab services and its costs along with technical staff workload provides insights on the relationship between variables and the uncertainty of financial strategic effects.

*Corresponding Author

Name: Pratibha Ramani
 Phone: +91 9841414603
 Email: pratibharamani@saveetha.com

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL4.4103>

Production and Hosted by

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INTRODUCTION

Financial resources are essential to medicine based laboratories in the operation of services and one of the main concerns to lab managers. (Mouseli *et al.*, 2017) But they are limited, and today in most countries, the medicine-based labs face serious problems. Because of this, there is a need for use of money supplies and managers must be able to provide lab test services at a reasonable cost and also be able to maintain their labs quality standards. Awareness of the cost of lab test services and allocating

available resources among lab managers are necessary. (Javid *et al.*, 2015; Mouseli *et al.*, 2017; Su *et al.*, 2016) Cost examination assumes a significant job in strategy making and causes research center directors to create suitable methodologies for genuine costing. (Mouseli *et al.*, 2017)

Cost control has risen as one of the significant difficulties confronting lab activities. (Jayaraj *et al.*, 2015b) The exemptions of top-notch results with diminished pivot time and expanded outstanding tasks at hand with diminished workforce is on the expansion and are significant elements in running clinical labs effectively. (Cheah *et al.*, 2018; Sivaramkrishnan and Ramani, 2015) Primarily, the cost factors depend on the type of tests undertaken in the clinical lab, including haematological tests, biochemical tests, pathological tests or microbiological tests. (Jangid *et al.*, 2015) Another central point is how much the lab tests may be manual or computerized, with the volume of test samples. The other significant components incorporate the degree of income of the nation, since that influences compensations and lab zone costs specifically; however it can mildly affect cost of lab assets utilized in testing lab tests. (Cheah *et al.*, 2018)

The outstanding task at hand based costing, by thinking about the causal connection among expenses and remaining burden, and giving administrative data as money related models, is more valuable than traditional accounting methods. Likewise, it unmistakably reflects labor, hardware and exercises of the area, giving the genuine and exact costs which prompts expanded productivity, viability and in the long run accomplishment of the key destinations of the research facility. With this technique, immediate and circuitous expenses for giving research center administrations can be resolved. Besides, lab chiefs ought to recognize the expensive territories and gauge their expenses against picked up benefit. (Mouseli *et al.*, 2017)

Several literatures studied the early detection and prompt diagnosis can lead to better prognosis and help in the implementation of successful clinical treatment procedures. (Gheena and Ezhilarasan, 2019; Hannah *et al.*, 2018; Jayaraj and Sherlin, 2015; Sherlin and Ramani, 2015)

In this way, prognostic biomarkers can fill in as an apparatus for finding, among boundaries that can without much of a stretch distinguish patients at higher (Sridharan *et al.*, 2017; Swathy *et al.*, 2015; Viveka *et al.*, 2016) risk and adverse result during clinical introduction and furthermore anticipate the risk and identify any progressions. (Gupta and Ramani, 2016; Shree *et al.*, 2019; Jayaraj *et al.*, 2015a; Sridharan *et al.*, 2019; Thangaraj *et al.*, 2016)

This study, costing exercise is being reviewed focusing on the workflow of clinical laboratories. The financial independence of the clinical lab tests focuses on individual departments based on lab services such as hematology, pathology, microbiology and biochemistry which are found to be most labour-intensive divisions in the lab and assumed to be financially burdensome.

MATERIALS AND METHODS

Search strategy for identification of studies

The pursuit technique was as per the Cochrane rules for precise surveys. Articles were looked and chosen utilizing PUBMED, MEDLINE and Google scholar. All possible studies of financial strategic impact on clinical lab managers, were included.

The article search included just those distributed in the English writing. An Internet search was likewise finished with the keywords “financial, strategic, impact, clinical laboratory, managers.” Literatures also evaluating the ‘financial strategic impact on clinical laboratory managers’ in cross-references were also included.

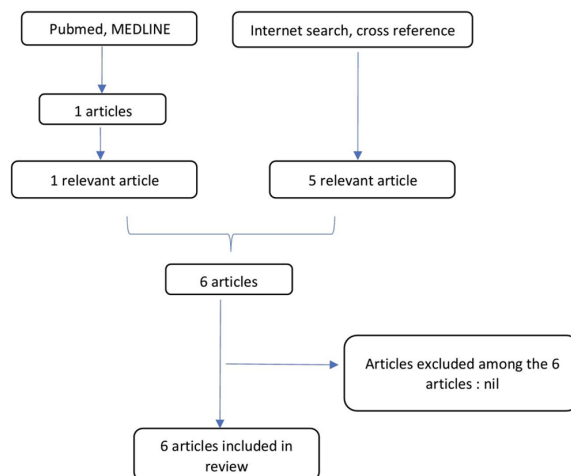


Figure 1: Shows flow chart for study selection.

Selection criteria

The title of the articles and abstracts was explored. Articles that considered ‘financial strategic impact on clinical laboratory managers’ were chosen for further appraisal.

Data extraction and analysis

Once the articles to be reviewed are finalized, data extracted from each article were tabulated and was later cross checked. (Table 1) Flow chart for study selection. (Figure 1)

Outcomes

The financial strategic impacts on clinical lab managers were analyzed for relevance.

RESULTS AND DISCUSSION

Methods of review

The selection and exclusion criteria of the reviewed studies are shown in Figure 1. The search strategy identified six studies that evaluated financial strategic impact on clinical lab managers. The descriptions of the individual studies are shown in (Table 1).

Included studies

Among the six included studies, the financial strategic impact on clinical lab managers was studied in detail. (Table 1)

Outcomes

There was substantial relevance in the articles studied that had evaluated the impact of financial strategies on clinical lab managers.

In this study, the cost of lab test services and workload data based on technical staff workload had been reviewed.

Table 1: Shows description of included studies

S.NO.	Citations	Technical staff workload	Inferences	Advantages / limitations
1	(Sedrak <i>et al.</i> , 2017)	60 lab test groups including; higher and lower comorbidity risk scores, Intensive care unit (ICU), tests with the top and bottom quartiles of Medicare allowable fee value	Lab administration expense didn't prompt any significant or reliable changes in generally speaking clinician requesting conduct or related charges	Information on clinicians was not available for comparison and model adjustment. The study also evaluated price transparency using lab service fees, which was necessary to evaluate the impact of other forms of price transparency.
2	(Feldman <i>et al.</i> , 2013)	70 diagnostic tests Medicine, Intensive care units, Surgery, Neurology, Obstetrics and gynecology Psychiatry, Emergency department, Pediatrics, other Ordering provider Physicians including Nursing staff and other clinical personnel	Lab administration expenses of symptomatic tests at the hour of requesting can moderately influence supplier requesting conduct.	The degree of asymmetric randomization of tests to the active and control arms was sudden. It additionally stays obscure in the case of showing expenses of all tests would prompt an increasingly emotional decrease in test requesting or desensitize suppliers to the showed charge data.
3	(Cheah <i>et al.</i> , 2018)	Anatomic laboratory Clinical laboratory Medical microbiology laboratory	The laboratory income exceeded expenditure.	The remodel cost contained the expense of a couple of bits of sturdy hardware, (for example, fume cabinets), which couldn't be broken out independently.
4	(Javid <i>et al.</i> , 2015)	Burn unit CCU Emergency ICU Laboratory Pharmacy Radiology Surgery unit	Activity based costing technique spoke to increasingly exact data on the significant cost parts.	

Continued on next page

Table 1 continued

S.NO.	Citations	Technical workload	staff	Inferences	Advantages / limitations
5	(Su <i>et al.</i> , 2016)	Clinical microscopy Blood bank Hematology Clinical chemistry Seroimmunology Microbiology		There is no direct connection among volumes and expenses.	Labs with multi-functional, tremendous offices are bound to be loaded up with exceptionally engaged experts
6	(Ninci and Ocakcon, 2004)	<1000 ush Clotting time, Bleeding time, Brucella E:S:R Rheuma F. HB VDRL; 1000-2500 ush Preg test, Blood Group, Stool parasites, Malaria, Reticulocytes Plalets IMPRINT smear, Vag /Uret smear, Albumin TPHA * Crossmachting Sickling test, Total protein, Blood Sugar, Blood, Urea, GPT GOT Urine, 3 par Filaria Trypan-soma, Urine, 9 P Creatinine, W.B.C. count; 2500-4000 ush Culture/sensitivity, biopsy post-mortem, Sputum-Zn Occult blood Aspirate Alk. Phosph. Uric acid Bilirubin T/D Electr. Na/K HIV Capillus * CSF; >4000 useful hemogr. HIV Serocard* Direct culture		The expense of every lab remaining task at hand is lower than the one found in the earlier year which was because of the augmentation in the quantity of tests and, simultaneously, to the decrease of lab faculty.	In view of shortage of such examination there was no chance to analyze the expense of individual research center test.

According to literature, the remaining task at hand based costing involves various advantages including the capacity to evaluate the genuine expenses of outstanding task at hand and recognizing the connection between the expenses and remaining task at hand. Studies additionally indicated proof that remaining burden based costing is an appropriate framework for costing in clinical lab tasks. (Javid *et al.*, 2015) The study by Su *et al.* showed no relationship existed between volumes of lab tests and service costs. (Su *et al.*, 2016) Whereas, in the study by Murihead *et al.* it was found that service costs depend on service function associated with case distribution. The shows proof that outstanding task at hand based costing comprises the circumstances and logical results connection among remaining burden and cost questions henceforth gives data on the real unit cost of offering clinical types of assistance in the labs.

The measure of expenses of each test in the research center of intrigue is by all accounts relative to the quantity of case visits and performed tests; thus the measure of cost has a sane figure and shows the measure of customer's interest for each test. The reason, anticipated results, and explanations behind breakdown of research center administrations additionally are basic for quality improvement.

Laboratory management personnel are into the assignment of principal updating of their test administrations and concentrating on client needs in which the research facility endeavors to help in making quality medicinal services administration thereby creating a sense of confidence in the community which can lead to better use of the laboratory services and thereby indirectly increasing the revenue.

By reviewing the literature we suggest that any laboratory should have a financial model by analyzing their net present value with a forecast for a minimum of 5 year plan with financial projections along with risk outlines which can determine the rate at which they will be able to sustain the laboratory.

It is very interesting and also intriguing to note that very limited studies are available on this particular aspect of laboratory management though the success of any laboratory depends on the financial strategies. For the future, nonetheless, it is sensible to anticipate that labs will vie for constrained capital assets dependent on quantifiable monetary improvement. As the research facility part keeps on growing with automation there will be expanded rivalry.

It is accordingly important to remain updated and applicable to get by in the market. Research facili-

ties need to find some harmony among benefit and obligation to cut over the difficulties and need to receive ways to deal with start, accomplish, and support productive development for the future.

CONCLUSIONS

Within the limitations of this study, the value analysis of services and its costs along with technical staff workload provides insights on the relationship between variables and the uncertainty of financial strategic effects on the need to eliminate or include allocated technical teams to handle services efficiently inside the clinical laboratory. Further, costing studies can provide insights into laboratory operation.

Conflict of interest

The authors declare that they have no conflict of interest for this study.

Funding support

The authors declare that they have no funding support for this study.

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