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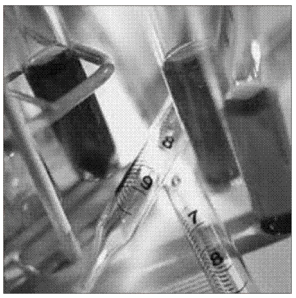

CLINICAL CHEMISTRY LABORATORY TESTING;

EVALUATION AT QUAID-E-AZAM MEDICAL COLLEGE, BAHAWALPUR AFTER AUTONOMY

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ABSTRACT… tmarain@mul.paknet.com.pk. **Objective:** To determine the affect of autonomy on clinical chemical testing in pathology department Quaid-i-Azam Medical College and to assess the change in the attitudes of laboratorians and physicians **Study design:** Retrospective and comparative. **Duration of study:** 1-11-93 to 01-11-03 **Materials and Methods:** A retrospective study was carried out from 1-11-93 to 01-11 03 in which records from 1-11-93 to 1-11-03 were collected and evaluated .Separate record of each month's revenue from clinical chemistry section was calculated. In order to determine what changes have been brought about after autonomy a universal questionnaire was used to assess the attitudes of physicians and surgeons of hospital inquiring whether they noticed any improvement in the efficiency of clinical chemical test results after autonomy. 620 doctors were interviewed through structured questionnaire. The questionnaire was designed to assess the knowledge , attitude and practices of doctors towards autonomy. In order to determine that who is the most beneficent of autonomy ,different records were collected. and discussions were made with consultants. **Results:** Autonomy brought about a healthy change in the staff of clinical chemical section. Quality control has improved the morale of lab staff since technical deviations are more readily identified and corrected within the lab, gross errors are rarely found by the clinicians and so their respect for and confidence in the lab has strengthened Replenishment of chemicals/reagents are timely made. The number of available test has significantly increased which in turn has significantly raised the revenue generated since autonomy

is awarded. Pilferage of chemicals has been stopped. Turn around time has been decreased. Clinical Chemical section participates in External Quality Assessment Scheme, NEQAPP (National External Quality Assessment Program Pakistan),which is an essential part of the routine of a well –run lab. Patient is the most beneficent since autonomy is awarded to QMC/BVH, BWP. **Conclusions:** A significant improvement in the efficiency of the analytical performance has strengthened the faith of laboratorians and physicians in the test results after autonomy

KEY WORDS: Autonomy, chemical tests

INTRODUCTION

Laboratories are complex systems, multi service firms with an ultimate goal to provide results which are true indication of the patient's pathology. Ever increasing physicians expectations to enhance the information content of lab data and to couple cost- reduction measures with improvement in efficiency, particularly in regard to turn around time for reporting lab results has intensified pressure on clinical labs. There can be no more important task for the director of a clinical lab than to assess precision and accuracy of the analytical procedures under his/her supervision[1]. Measurements made by clinical procedures under taken without supervision will sooner or later run into difficulty. Every test, no matter how simple, goes wrong once in a while and the lab director must know how to get the analyses back on the right track[1,2].

Autonomy was awarded to Quaid-I-Azam Medical College/Bahawal Victoria Hospital, Bahawalpur (1318 bedded teaching hospital)in November 1998.Since then substantial progress has been made in improving the analytical quality of clinical chemical results at Pathology department Quaid-I-Azam Medical College Bahawalpur .Autonomy is a progressive, up-dated ,cost- effective and competitive system[3]. Maintenance of regular quality control programs and high standards of analyses in clinical chemical section of pathology department after autonomy has served as a scientific stimulus for laboratorians .Best quality is produced at lowest price.
No matter how sophisticated the lab's technology, the most valuable asset in an organization is – people[1,4]. Laboratorians have provided the wherewithal to accomplish whatever success has been made in meeting demands after autonomy. There exists an important relationship between qualified personnel and laboratory performance[5] .The main concern in clinical chemical section is technical competency : detecting errors following procedures, trouble shooting, not making mistakes. Productivity, technical abilities and professionalism is also considered essential as they add value to medical care[6]. It has been made mandatory to run quality control material for each analyte being tested.

MATERIALS AND METHODS

A retrospective study was carried out from 1-11-93 to 01-11-03 in which records from 1-11-93 to 1-11-03 were collected and evaluated .Separate record of each month's revenue from clinical chemistry section was calculated.

Clinical Chemical section of pathology department QMC/BVH Bahawalpur serves 1318 beded Bahawal Victoria Hospital and Out Patients Department. .

In order to determine what changes have been brought about after autonomy, a universal questionnaire was used to assess the attitudes of physicians and surgeons of hospital inquiring whether they noticed any improvement in the efficiency of clinical chemical test results after autonomy. 620 doctors were interviewed through structured questionnaire.

The questionnaire was designed to assess the knowledge, attitude and practices of doctors towards autonomy.

In order to determine that who is the most beneficent of

autonomy ,different records were collected and discussions were made with consultants.

Lab cost per test was determined .

For the purpose of analysis, total revenue generated by lab per month were pooled together and then amount generated by clinical chemical section was separately calculated. The revenue generated per month by clinical chemical section was calculated before and after autonomy from previous records. Percentage of revenue generated per month by clinical chemical section was calculated compared with pre and post autonomy era.

Shares which were being provided to the staff were calculated from previous records and were compared with the previous records.

Statistics Chi square test was used to see the significant or non- significant differences before and after autonomy between different variables

RESULTS

Previous records of the last decade(5 years pre autonomy era[01-11-1993 to 01-11-1998] and 5 years post autonomy era[01-11-1998 to 01 11 2003]) were carefully studied and it was found out that autonomy brought about a healthy change in the staff serving the clinical chemical section i.e., currently staffed with one assistant prof [FCPS-Chem Path],2 demonstrator [M.Phil chem. Path],3 Lab technicians, 2 lab assistants, 2 lab attendants(Table I)

Clinical chemistry section tends to have highly formalized competency programs and merely competent personnel is not enough. Working in laboratory medicine with professionalism, high ethics and a sense of duty and respect for the customer is essential.

Introducing quality control after 01 –11-1998, has improved the morale of lab staff since technical deviations are more readily identified and corrected within the lab, gross errors are rarely found by the clinicians and so their respect for and confidence in the lab has strengthened. This has engendered pride in the staff, leading to high morale which in turn has further reduced errors.

Table-I. Clinical chemical laboratory personnel evaluation

Lab Personnel	Before Autonomy	After Autonomy
Doctors*	None	3
Lab technicians	1	3
Lab assistants	3	2
Lab attendants	1	2

**chemical pathologists*

Previous record evaluation revealed important and fruitful changes in the attitudes of laboratorians after autonomy(Table II)

Table-II. Comparison of attitudes of laboatorians before and after autonomy

Attitude	Before Autonomy	After Autonomy
Punctuality	Irregular	Punctual and regular
Technical competency	Poor	Excellent
Morality	Variable	High
Ethics	Variable	Strong
Self- confidence	Variable	Very confident
CME* of laboratorians	No	Yes
Relations with each other	Good	Good
Liaison with physicians	Occasional	Regular

**CME; Continued Medical Education*

Pilferage of chemicals has been stopped by keeping

record of all patient investigations and match it with the supplies regularly.

Clinical chemical Section participate in External Quality Assessment Scheme, NEQAPP (National External Quality Assessment Program Pakistan) since 01 01 2000. This membership is an essential part of the routine of a well run lab.(Table III).

Table-III. Comparison of clinical laboratory testing before and after autonomy

Chemical Tests	Before Autonomy	After Autonomy
Maintenance of records	Poor	Well maintained
Number of tests/ months Mean±SD	6020 (24.6)	8826(22.9)[P <0.05]
Number of test available	21	32
Chemical analyzers available	Semi- Automated	Semi automated*
Analytical sensitivity of instruments	Poor	Good
Performance Characteristics of instruments	Poor	Good
Replenishment of kits	Not Timely Made	Almost timely made
Physicians attitude	Did Not Much Rely On Test Results	Bulit confidence and trust in lab test results
Quality Control material	Not Available	Regularly run before tests
NEQAPP** membership	No	yes
Quality of test results	Less Reliable	Accurate and precise ***
Working of lab	6.5 Hours (Morning Shift)	Round the clock
Turn around time	4 Hours	2 hours
Pilferage of chemicals	Yes	No
Space provided for bench work	Not Enough	Enough
Amount of share provided to laboratorians	Meagre	Handsome [P=<0.05]
Total Revenue generated /month by pathology deptt. in rupees (mean ±SD)	7030{210.8}	202800{3340.8}[P=<0.05]
% of total revenue generated by Clinical Chemical Lab	20.6%	47.7.% [P=<0.05]

**Orders for Purchase of Fully Automated Chemical Analyzers have already been made*
***NEQAPP; National External Quality Control Program Pakistan*
****As per results of NEQAPP Thrice yearly*

Lack of proper maintenance system of the lab instruments is still a great problem. Even very minute faults and dysfunctions cannot be corrected due to the non availability of electro medical engineers in the hospital.

This results in waste of time and money and resulting discomfort to patients. (Posts for electro-medical engineers have been recently advertised by the hospital administration, which will solve the problem). Lack of availability of chemical/reagents was yet another serious problem before autonomy . Replenishment of

chemicals/reagents now is usually made available before the old ones finish. The number of available test has significantly increased which in turn has significantly raised the revenue generated since autonomy is awarded(Table III).

Patients are our first priority in lab testing. They are best looked after and are provided maximum financial(either charged for their tests on minimal profit basis or Zakat Forms and Medical. Dockets are issued to poor and Govt. Servants), professional and emotional help.

The chief beneficiary of our quality control program is patient. He is not treated or studied further for a suspected disease "diagnosed" by an erroneous lab report.

Further he needs not to pay for supplementary lab tests performed to confirm or deny the validity of the suspected test.

Table- IV. Patient the most Beneficent

Variables	Before Autonomy	After Autonomy
Cost/ test	Decreased	Increased
Reliability	Poor	Excellent
Result despatch provision	4 Hours	2 hours
Repeated tests for confirmation	Often	Negligible
Number of test for diagnosis	More	Less
Services available	6.5 Hours / Day	Round the clock
Staff	Less and Not Trained	Trained, educated, competent

Time is also saved. Patients are better informed than ever and are no longer content to wait for action from the clinician (who often use lab delays as the excuse for tarrying).(Table IV)

DISCUSSION

In today's increasingly competitive environment, revenues per cost are continuing to decrease. To survive ,laboratories are adopting to this cost cutting necessity through organizational changes ,automation and staffing economies[7].

Since autonomy clinical chemical section of Pathology dept, QMC ,BWP has gained confidence and trust of the physicians because they now know that clinical chemical results come from a laboratory staffed with highly qualified and competent personnel. Physicians now increasingly rely on single laboratory results whereas in the past few years (pre –autonomy era), multi test profiles, follow-up testing and confirmatory investigations were common. Thus one area of decision making by estimating the quality of the test is eliminated. Closer consultation on difficult and complex clinical problems and co-operation between clinician and service lab has further increased efficient analysis by reducing the danger of missed diagnosis or misapplied therapy. Chemical pathologists make valuable contributions to the clinical audit, by applying expertise in data handling to the field of decision theory[8].

In Clinical chemical section, there is technology in the form of instruments, reagents, methods, automation and modern information technology, all of which are appropriately deployed. The induction of automation has brought revolution in clinical chemistry services at BVH, Bahawalpur. The use of computers in the lab has further enhanced the efficiency of clinical chemical lab. In this modern time of automation, quality control has become as important as the test itself[9]. Cost of commercial control sera is the major hitch to initiate quality control programs. Hopefully in future, when more facilities are provided , use of homemade control sera as control material will be started. The cost will then be curtailed to a significant extent. Lab equipment is the backbone for its smooth functioning[10]. Extreme stress is given upon proper performance of test procedures in order to

prevent systematic errors.

It is very difficult to establish effective methods for monitoring and controlling pre-analytical variables that occur outside the lab domains. Though constant contact with the wards is kept on telephone, support from out side the lab is still required to maintain a high quality of service. Good technical procedures are necessary to control and monitor pre-analytical variables such as test requests, patient preparation, patients and specimen identification, specimen acquisition, specimen transport, specimen processing and specimen distribution[1]. Because an error in any one of these steps can invalidate the quality of analyses and causes the lab to fall short of its quality goals[1] .The unnecessary investigations results in financial stress on poor patients .Young doctors should get refresher courses about lab investigations and costly and complex investigations should be requested by consultants only.

CONCLUSION

Efficient economical and speedy clinical chemistry laboratory testing at Pathology dept QMC/BVH has markedly influenced the critical care environment during the last 5 years. This significant improvement in the efficiency of the analytical performance has strengthened the faith of laboratorians and physicians in the test results after autonomy

REFERENCES

1. Sunderman FW. **The History of Proficiency Testing/ Quality Control.** Clin. Chem.,1992;30(7):1205-9.
2. Veney J, Kaluzzny A. **Evaluation and Decision making for health Services,2nd ed.** Ann Arbour, MI :Health Administration Press,1991;447.
3. Saeed M; **Lab Services at Govt. Hospitals;** The Prof. Vol.06(1) ,1999;1-2.
4. Ash KO. **Laboratory adaptations to health care initiatives:** part I.Clin Chem 1994;40:2332-3.
5. Jahn M. **The managed care era strikes the lab.** Med Lab Obs 1995;27: 38-43.
6. Sainato D. **Study indicates link between testing and patient outcomes.** Clin Lab News 1995; 21:8-11.
7. Ash KO. **Impact of cost cutting on laboratories new business strategies for laboratories.** Clin Chem 1996;42:5 ;822-26.
8. Clarke R. **Enrollees fleeing from HMO's study says**. Med Lab Obs.1995;27:10
9. Ash KO. **Laboratories adaptations to health care initiative: part II.** Clin Chem.1995 ;41:128-30.
10. Winslow R. **Getting down to business at Duke's medical school.** Wall Street Journal, 1995; Aug 29:B1-2