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Justification for the Continuance of a Pediatric Physician's Office Laboratory

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JUSTIFICATION FOR THE CONTINUANCE OF A PEDIATRIC PHYSICIAN'S OFFICE LABORATORY

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ABSTRACT

The continued viability of the Physician's Office Laboratory (POL) has been questioned because of barriers imposed by managed care organizations, oversight by regulatory agencies and competition for professionally trained laboratory staff. Pediatricians view the POL as an important adjunct to quality healthcare services for children and do not consider the POL as a "profit center", whose priority is generation of revenues for the practice. The parents of pediatric patients consider an on-site laboratory a convenience and valuable service.

Through an analysis of patients' satisfaction, physicians' perceptions of enhancement to quality care, managed care reimbursement data and costs associated with maintenance of a POL, this study justifies the continuance of in-office laboratory services by pediatricians. In addition, issues regarding POL regulation, "waived" testing and professionally trained laboratory staffing, are addressed

The physician office laboratory (POL) has been an integral part of physicians' practices for decades. In general, testing consisted of a few basic manual tests, which were run by the physicians or a physician-trained aide or nurse. The POL was considered an enhancement to the physician's practice, which was reimbursed by non-discounted fee-for-service indemnity insurance plans. Clinical testing by the physician in the POL was a profitable adjunct to a physician's practice. However, as the result of increasing regulations and oversight by the federal government, limitations posed by managed care and increasing difficulty accessing trained laboratory personnel, many have questioned continued viability of the POL.

BACKGROUND

In the early eighties, several automated testing instruments were introduced to the clinical laboratory market, which were easy to use, capable of performing more sophisticated tests and could be affordably leased from a supplier who would train the physician and staff to perform testing. As a result, the number and the complexity of the testing menu offered by physicians increased. Because POL testing continued to be reimbursed at a fee-for-service basis, this service offered by physicians, continued to be profitable for them. In addition, POLs were not regulated in any way. There was no credentialing of the testing personnel, there were no requirements to prove that quality control was

performed, the proficiency of the laboratory was never tested and the physician who owned the POL, as part of the practice, was not required to have the laboratory accredited in any way.

Regulatory Environment

The regulatory climate began to change in the late nineteen eighties, when the federal government enacted the Clinical Laboratory Improvement Amendments of 1988, known as CLIA '88, which initiated stringent standards that POLs were mandated to comply with. CLIA '88 was implemented to improve the quality of clinical laboratory practice and thereby contribute to improved patient care.[1] This oversight, by the federal government, triggered a change within physicians' practices, many abandoning their in-office laboratory testing due to an inability to comply with the requirements to become certified to perform testing. The physicians, who continued to provide laboratory services, reduced their menu of tests and enhanced documentation and quality control for tests that were done. [2]

Managed Care Environment

The late nineteen eighties saw a rapid change in the health care system with a shift to managed care from traditional fee-for-service indemnity insurance plans. Managed care's objective was to cut healthcare costs through discounted services. This included reimbursing physicians on a capitation basis or by discounted fee-for-service. Many managed care organizations no longer allowed physicians to perform laboratory testing in their offices, even if they were willing to do so by risk-sharing capitation reimbursement

or were agreeable to accept a steep discount on their laboratory services. These managed care organizations prefer to have their members tested at national reference laboratory corporations, who provided large discounts on their services for managed care members. This has not only had a negative impact on POLs, but also small independent clinical laboratories, many of which have closed.

Personnel Environment

Another issue, which has had a negative impact on the POL, is access to professional laboratory technicians. Historically, physicians performed laboratory testing themselves or entrusted the testing to non-professional staff, who were not licensed or credentialed and whose only training was by the physician or manufacturer representatives of the laboratory instrument, which the physician purchased for his POL. Changes in regulation of the POL and increasing medical liability has forced physicians to hire credentialed laboratory technicians to work in their office laboratories. These technicians demand substantial salaries, which some physicians are unable to afford due to increasingly discounted managed care reimbursement. In the past twenty years, the job responsibilities of laboratory technicians and scientists have shifted away from technical performance of routine laboratory tests toward the use of new technology in performing more sophisticated testing. Many technicians have assumed positions in management or have embarked on new career paths. [3] In addition, competition exists with hospitals and the large national commercial laboratories for these workers. This staffing situation has been considered a barrier to physicians who wish to continue to offer laboratory services in their practices.

Purpose of the Study

Some have questioned the continuance of physicians performing laboratory testing in their offices, because of the fore-mentioned existing barriers and decreasing profitability of the POL. This paper will study the current environment of a POL maintained by a pediatric group practice.

The hypothesis of this study is that, clinical laboratory testing by a pediatric group in their offices, is a justifiable service because it enhances the quality of care afforded to children, despite increasing oversight by governmental agencies, limitations imposed by managed care, concerns about profitability and difficulties obtaining testing personnel. This will be substantiated by an evaluation patient satisfaction surveys and physicians' perceptions and attitudes re POL testing; an analysis of POL test volume and reimbursement data; an assessment of the profitability of the POL; and a review of regulatory and staffing barriers.

METHODS

Participants

All data and testing results were performed and obtained at the office of a pediatric group practice, located in a New York City. This is a five physician, pediatric group practice, which performs approximately 40,000 clinical laboratory tests per year. The group has maintained a POL for over thirty years, during which time it has increased and, then in

recent years, decreased the menu of clinical testing available. The families served by the practice are predominately middle class and have healthcare insurance. Approximately 60% of patients have some form of managed care, 30% have an ERISA, employer self-funded coverage, 5% of patients have Medicaid, 4% have traditional indemnity fee-for-service, and 1% have no healthcare insurance. The predominant form of reimbursement is discounted fee-for-service, with only 10% of patients in capitation reimbursement plans.

Currently, the laboratory employs five full-time laboratorians, who are high school graduates. One of the laboratorians is a graduate of a one-year continuing education course in laboratory science, but is not licensed. The Laboratory Director and Laboratory Manager trained the remaining laboratorians. Salaries range from $15,000 to $26,000 per year. The five physicians in the practice are all board certified pediatricians. For the most part, they do not participate in laboratory testing, however, they do serve as technical and clinical consultants to the POL. The Laboratory Director, a position mandated by CLIA "88, is held by one of the group's physicians.

Survey Design

Over a period of two weeks, a simple probability sample, without replacement, of one hundred parents visiting the pediatric office was selected randomly to participate in a patient satisfaction survey, which focused on patients' perceptions of laboratory testing services available at the pediatric group's offices. The survey consisted of a short questionnaire, consisting of ten questions, which was answerable by circling the appropriate response: "AGREE", "DISAGREE" or "NOT SURE" (Appendix A). The

patient satisfaction questionnaire took approximately five minutes to complete. No agreements or payments were made to the survey participants. All participants were a parent (either mother or father) of a patient who is cared for by the group. The survey sample was not subdivided as to race, ethnicity, third party payer, type of insurance or how long the patient was associated with the practice. The survey offered anonymity to the participants. The questions were designed to ascertain the perceived value of the POL to the respondents. Patients were queried as to convenience, the attitude of the laboratory staff, the ease in obtaining results, their perception of the quality of the testing performed and if an office laboratory had any impact on their decision to join or remain with the practice. In addition, they were asked if they had recommended any new patients to the practice based on their ability to access laboratory testing through the POL. Finally, patient's knowledge of the accreditation and certification status of the POL was determined. Attempts were made to minimize survey errors, which could result in selection bias, sampling errors and measurement errors.

The physicians of the pediatric practice participated in a Focus Group in which they discussed their perceptions regarding the POL as an adjunct to their ability to provide healthcare services to their patients, whether they thought it was essential that the POL generates a profit for the organization, and finally, whether they felt the "hassle factor" of regulation, managed care cut-backs and inaccessibility of adequately trained personnel, could impact the ability of the practice to continue the services of the POL.

Additionally, seven pediatricians practicing in the community were informally queried as to their perception of the profitability of their POL, types of testing performed and whether they planned to make any changes in their testing menu in the near future.

A survey of the insurance carriers and managed care organizations, which the practice participates with, was made to determine the existence of limitations on the type of POL testing allowable by the third party payers. The survey was performed by the group's Billing Manager and was based on information published in memorandums, policy manuals and newsletters by the third party insurance carriers and managed care organizations. In addition, the Billing Manager made an analysis of representative "Explanation of Benefits" reports, which demonstrated the payment status and reimbursement of specific laboratory tests by third party payers for which claims had been generated.

Data Collection

An analysis of the number of tests and reimbursement rates for laboratory tests performed during a three to four year period was made. The analysis was based on reports, which were generated by the group's Billing Manager. The data was obtained through the Advantix software, which is licensed by Health Information Systems (HIS), the group's billing information services vendor. Some of the laboratory reimbursement data was provided through a professional billing service, which the pediatric group used for a short period of time for medical claims submission to third party payers.

A study of the costs referable to maintaining the POL was made using cost accounting techniques designed by Leslie K Pearlman[4] and outlines used in Seton Hall University course PSMA 6005. Costs were determined through an analysis of the practice's vendor invoices, payroll records, and rental information based on the square footage of the laboratory in relation to the total square feet of the pediatric office. Special consideration was given to laboratory staff salaries specifically attributed to POL activities. This was necessary because approximately thirty percent of the laboratorian's time is taken up by duties not specifically involved with laboratory testing. Such activities include assisting physicians, ordering and handling of medical supplies other than those used in testing, maintenance of vaccines, patient triaging, performing other diagnostic testing and preparation and cleaning of examination rooms.

Statistical Analysis

Data generated as a result of this study was analyzed using methods described by David M. Levine, et al[5] in the textbook," Statistics for Managers Using Microsoft Excel". The data collected in the study was analyzed using the Microsoft Excel spreadsheet application from the Microsoft Office suite computer program. Statistical computations, charts and tables were developed using PHStat, the Prentice-Hall statistical add-in for Microsoft Excel. All statistical calculations were performed, without assistance from consultants. Additional statistical principles were reviewed, as presented in the textbook, "Introduction to Statistics".[6]

RESULTS

This study seeks to prove that even in the presence of significant barriers, a POL is an important and desirable element of a physician's practice. For the pediatrician, the POL takes on particular significance, in that it is a major enhancer of quality healthcare for children. The issue of the profitability of the POL in a pediatric practice, therefore, is not the first priority. However, in the current healthcare system, with diminishing reimbursement for physician services, increased regulatory oversight of clinical laboratories, limitations on a physicians ability to perform on-site laboratory testing and competition for professional trained laboratory technicians, an in depth evaluation of the POL needs to be performed, to prove that continuing this service is justifiable.

To prove the hypotheses, that there is the justification of POL services, because this service enhances the quality of healthcare services to children, despite barriers imposed by increased regulation, limitation on testing imposed by managed care organizations, problems recruiting professional laboratory staff and uncertain profitability, three major items have been analyzed:

I. The attitude and perceptions of the patient and physician in regard the POL
II. The impact of managed care on the ability to perform POL testing
III. The cost analysis of a pediatric POL in relation to revenues

The results obtained by an in depth evaluation of these three factors, will be delineated and conclusions reached, which will prove or disprove this study's hypothesis.

I. Attitudes and Perceptions

The perception that there is quality enhancement of healthcare in children through availability of POL services was definitely substantiated by a patient satisfaction survey, a Focus Group discussion of practice's physicians and informal queries of community pediatricians who offer POL services to their patients.

Patient's Satisfaction Survey

The attitudes and perceptions of patients regarding the POL were ascertained by a patient satisfaction survey. One hundred patient satisfaction questionnaires were distributed and returned to staff for analysis. No patients declined to participate in the survey. All of the questionnaires were answered correctly. The results of the survey indicated several factors and opinions, which are important to the pediatric group.

One hundred percent of the participants had knowledge that there was a POL on-site, as their children had received laboratory testing in the office. The vast majority of the parents, ninety-eight percent, agreed that it was important for their children to receive "one-stop" services, as far as laboratory testing. This is a testimony to the fact that parents frequently complain when they must take the child to a commercial reference laboratory for testing, when a test, not offered at the POL, is required. Although most parents felt that the laboratorians were courteous, thirteen percent did not agree with this statement. It was gratifying, however, to have all of the participants agree that OSHA standards were being complied with, as laboratorians were using disposable gloves and discarding soiled materials properly, in their estimation. Twenty percent of the parents

disagreed that they were able to access laboratory results on their child easily. Generally, parents can obtain results, depending upon the test ordered, in the following ways:

- Complete blood count (CBC), urinalysis (UA), rapid streptococcus screen, infectious mononucleosis screening (Mono-Spot) and screen for occult blood in the stool (Hemacult), blood glucose and urea nitrogen levels for sick children are available within fifteen minutes of specimen collection and parents are invited to wait at the office for results and further consultation with their physician.
- Parents may call the POL on the following day for throat cultures indicating the presence of Streptococcus, urine culture (Clinitest), erythrocyte sedimentation rate (ESR) and all routine testing on well children.
- Parents are told that all abnormal test results will be directly reported to them, via telephone by the physician within twenty-four hours.
- It is the policy of the laboratory to report any "critically" abnormal (panic values) laboratory results, immediately, if such values are obtained.

Thus, it was surprising that such a large percentage of parents had the perception that it was not easy to obtain laboratory results from the POL.

The patient confidence level that the POL testing results were accurate and correct was ninety percent. This is disconcerting and may be linked with the fact that only fifty-one percent of parents were aware that the POL is audited and tested for the accuracy of the testing results. The fact that thirty-nine percent of those queried had no knowledge of POL oversight by credentialing and accreditation agencies, leaves a large margin for the practice to improve publicizing to patients, the stringent regulations regarding quality

control, quality assurance, proficiency testing and credentialing, with which the POL and its staff must comply. It was evident from the survey, that the POL plays a major factor in recruiting new patients into the practice and in the retention of current patients, as only seven percent of the respondents disagreed with this statement. Eighty-six percent of parents have discussed the POL with other parents and, finally, sixty-five percent of those who answered the questionnaire have recommended new patients to the group, in part, because of the availability of on-site laboratory testing.

In all, approximately eighty-five percent of patients agreed with the questions posed, eleven percent disagreed and four percent were not able or did not have enough knowledge of POL services and staff to make a decision, either way. It was arbitrarily decided, that the level of patient satisfaction would be measured, in a similar manner to the Health Plan Report Card grading system used by the National Committee for Quality Assurance (NCQA), the managed care organization accreditation body which rates these organization's member satisfaction. An NCQA Health Plan Report Card rating above eighty percent is considered very good. Thus, patient satisfaction percentage, which was obtained in this study, is considered to be above average and acceptable. Special care was taken in the survey to assure that it was bias-free and that the participants were not duly influenced or pressured in their responses, by staff or physicians at the pediatric group. The questionnaire was "blinded", as far as the ability to identify the patient or parent. When the questionnaire was completed it was placed in a secure box and not examined until the end of office hours. The results of the patient satisfaction survey with the POL are tabulated in Table I.

Table 1. Patient Satisfaction Survey performed to ascertain parents' attitudes re POL

QUESTION	*AGREE*	*DIS-AGREE*	*NOT SURE*	*TOTAL*
My child or children have had laboratory testing at my pediatrician's office clinical laboratory at least once.	100	0	0	100
It is important for me and my child to be able to have laboratory testing in my pediatrician's office instead of having to go to an "outside" commercial laboratory.	98	2	0	100
The laboratory staff is courteous and caring while taking the specimen to be tested.	86	13	1	100
The laboratory staff is conscientious in their cleanliness, use of disposable gloves and properly discarding needles and other supplies used in taking the sample to be tested.	100	0	0	100
In general, it is easy for me to obtain laboratory results on my child.	79	20	1	100
I feel confident that tests performed at the office laboratory are accurate and correct.	90	7	3	100
I am aware that the office laboratory and staff have been tested and reviewed to determine that they are properly performing laboratory tests and that the results are correct.	51	10	39	100
One of the reasons, why I joined my pediatrician's group practice and continue to use the doctors here, is that laboratory tests can be done at the office.	93	7	0	100
I have told other parents about the laboratory services, my child's pediatricians offer.	86	14	0	100
I have recommended new patients to this pediatric practice, in part, because of the availability of laboratory services.	65	35	0	100
TOTAL QUESTION ANSWERED	848	108	44	1,000

Physician Focus Group Discussions Regarding the POL

The attitudes and perceptions of physicians regarding POLs were ascertained through a Focus Group at the pediatric practice's offices and informal queries with community physicians.

All of the physicians of the pediatric group practice were asked to give their opinion regarding three important issues, which have a significant impact on the justification of continuing to offer POL services at the practice. The following questions were posed at a Focus Group discussion and a summary of their responses follows:

- **How important is the POL to you as an adjunct to providing quality healthcare services to your patients?** The physicians unanimously agreed that the POL is a very important modality in patient care. The major benefit they perceived was the ability to obtain laboratory results within a short period of time for a sick child. One of the physicians stated that having laboratory testing immediately available, saved managed care organizations money because, without such tests, many of these children would be sent to the hospital emergency department or admitted to the hospital for further evaluation. In addition, on-sight testing gives the physician the ability to monitor the course of an illness by serial testing. One of the physicians had concerns over abuse of testing, in that, the physicians have become over-reliant on the laboratory and thus, not using their clinical acumen and judgment. Two of the physicians had concerns regarding de-selection from managed care panels due to over-use of laboratory services. Finally, one of the physicians voiced annoyance at

patients who demand testing, even when not indicated, because it so convenient and they do not directly pay for these services.

- **What are the group physicians' perceptions and possible concerns regarding the profitability of POL testing?** Again, the physicians' thoughts in regard to this question were fairly uniform. All felt that the POL generated some profit, however, this was not a major factor in regard to justification for discontinuing POL services in the practice. All agreed that the POL should, at least, not be a deficit service center. Opinions were given regarding increasing the menu of testing offered by the laboratory. The Laboratory Director discussed the increasing number of "waived" tests, which are becoming available. These tests do not require proficiency testing, or the stringent oversight of other laboratory tests now being run by the POL.
- **Will the "hassle factor" of regulatory oversight, managed care limitations on testing of patients and the availability of professionally trained laboratory staff impact, in any way, decisions regarding continued viability of the POL?** The general consensus of the group was that there is a definite possibility that these factors could potentially tip the scale, one way or the other, in regard to continued on-site testing. The most formidable of these barriers is the increasing limitations which managed care has placed on testing patients using the POL. Each year third party payers are more stringently disallowing the ability of POLs to perform commonly ordered and necessary testing procedures on their members. In addition, one carrier does not allow any POL testing, regardless of whether the patient is willing to pay out-of-pocket for POL services. The issue of accessibility to professionally trained laboratory personnel was not considered a barrier to the continued existence of the

POL. The physicians unanimously agreed, that there was adequate on-the-job training of personnel, even for those with no previous laboratory science background. In addition, on-site training had some distinct advantages for the group, in that these employees were loyal, tended to remain in the employ of the practice and did not require salaries much in excess of clerical office staff. The "hassle factor" of regulatory oversight was not considered a barrier to the justification of continuing to offer POL services. It was noted by the Laboratory Director, that the POL has been successfully complying with all regulations and staff has been trained, in addition, to adhere to all standards set by the POL accrediting body, Committee of Office Laboratory Accreditation (COLA), CLIA '88, the Occupational Safety and Health Administration (OSHA) and all other regulatory entities.

Community Pediatricians' Query

Informal queries were made of local pediatricians within the community who currently have POLs. They were asked to comment on the following questions. A summary of their responses follows:

- **What is the pediatrician's perception of the profitability of their POL?** Most stated, similar to the group pediatricians, that they did not consider the POL profitable, in fact one physician stated that their practice is losing money by keeping the POL open. One pediatrician had performed some cost analysis in the past and found that a small profit was generated through the POL. All considered it a service center, necessary for providing quality pediatric healthcare.

- **What types of testing are performed in the community physician's POL?** The majority of pediatricians performed a limited menu of testing through their POL. The most common tests done were automated CBCs, hemoglobin/hematocrit, dipstick non-automated urinalysis and rapid tests for Streptococcus. A few did throat cultures for Streptococcus in their POL. None had the extensive menu offered by the group practice, which was being studied
- **What changes did the community pediatricians plan to make regarding their POL in the near future?** One was strongly considering closing the POL. Most were considering doing more waived testing, which did not require the rigorous documentation of quality control and proficiency testing. All expressed concern regarding increasing limitations being placed on POLs by managed care organizations.

II. The Impact of Managed Care

The impact of managed care on the POL was evaluated using two comparative study modalities, namely, test volume over a four-year period and revenue generated by the POL over a three-year period. The results of these analyses indicate that managed care does have a negative impact on a physician's ability to perform in-office lab tests.

POL Test Volume Analysis

The issue of the impact of managed care on the ability of physicians to perform clinical testing in a POL was evaluated by an analysis of the clinical test volume performed by the group practice's POL over a four-year time span, 1998 through 2001. Appendix B depicts a comparative listing of test volume by month and type of test for each of these four years. Although the patient volume has steadily increased during this time frame, there was a decrease in the number of tests performed. In particular, throat culture testing, which determines the presence of Strep by overnight incubation of a throat swab specimen applied to an agar culture plate, and Rapid Strep tests, which detects the presence of Strep in the throat within five minutes, decreased. A summary of Appendix B is presented in Table 2.

Table 2. Comparative analysis of number of throat cultures and rapid Strep performed between 1998 through 2001

YEAR	#THROAT CULTURES	#RAPID STREP	TOTAL TESTS PERFORMED	% THROAT CULTURES	% RAPID STREP
1998	15,219	12,399	39,913	38%	31%
1999	13,820	11,231	33,905	40%	33%
2000	13,165	11,175	37,694	34%	29%
2001	12,527	10,411	36,054	34%	28%

Table 2 clearly indicates that within the four-year interval, 1998 through 2001, there has been a ten percent decrease in overall testing volume. Contributing to this overall decrease in volume is an eighteen percent decrease in the number of throat cultures and a sixteen percent decrease in Rapid Strep tests, which were performed on-site by the

pediatric group POL. During this four-year period, the pediatric practice grew by approximately twenty percent, which represents an increase of two thousand children.

A descriptive statistical analysis of throat culture volume over the four-year period indicates that the mean number of tests performed per month decreased from a high of one thousand two hundred sixty eight in 1998 to a low of one thousand forty three in year 2001. This represents a negative variance of eighteen percent over a four-year period. The full descriptive statistical analysis of throat culture volume per month can be found in Appendix D. A summary of these statistical calculations is represented in Table 3.

Table 3. Descriptive Statistics of comparative volume throat cultures performed 1998 - 2001

YEAR	TOTAL VOLUME OF TESTS	THROAT CULT.COUNT FOR YEAR	MEAN VOLUME PER MONTH	MINIMUM PER MONTH	MAXIMUM PER MONTH
1998	39,913	15219	1268	769	1754
1999	33,905	13,820	1135	684	1695
2000	37,694	13,165	1097	705	1471
2001	36,054	12,527	1043	424	2148

Managed care organizations have had a negative impact on the ability to perform testing in the POL by not only forcing physicians to accept a significant discount in reimbursement for clinical testing, but also, by increasingly refusing to reimburse specific laboratory tests. This fact is clearly depicted in Table 4, which lists tests not covered by

the most common third party payers in year 2001. The menu of tests not reimbursed by third party payers has expanded yearly

Table 4: Limitation of testing in POL by third party payers in year 2001

HEALTHCARE PLAN	TESTS NOT COVERED	COMMENTS
AETNA/US HEALTHCARE HMO	▫ NO LAB TESTING COVERED IN OUR OFFICE	▫ QUICK STREP TEST PROVIDED BY AETNA IS COVERED ▫ SEND THROAT CULTURES TO QUEST
AETNA/US HEALTHCARE QPOS	▫ NO LAB TESTING UNLESS PATIENT PAYS FOR TESTS OUT-OF-POCKET	▫ QUICK STREP TEST PROVIDED BY AETNA IS COVERED WITHOUT CHARGE ▫ SEND THROAT CULTURES TO QUEST
MEDICAID	▫ NO QUICK STREP TEST ▫ NO CHOLESTEROL ▫ NO MONO TEST	▫ OVERNIGHT THROAT CULTURE COVERED
CHILD HEALTH PLUS	▫ NO THROAT CULTURES ▫ NO MONO TESTS	▫ SEND OUT THROAT CULTURES TO QUEST
EMPIRE BC/CS PLANS ▫ BLUE CHOICE ▫ HEALTHNET	▫ NO THROAT CULTURES ▫ NO MONO TESTS	▫ SEND THROAT CULTURES TO QUEST
OXFORD	▫ NO CBC AT WELL CHILD VISIT ▫ NO MONO TESTS ▫ NO CHOLESTEROL	▫ CBC COVERED ONLY IF CHILD IS SICK
PHCS	▫ NO QUICK STREP TEST ▫ NO MONO TESTS	▫ THROAT CULTURE IS COVERED
▫ PRU-CARE ▫ PRUDENTIAL	▫ NO THROAT CULTURE ▫ NO MONO TEST	▫ SEND THROAT CULTURE TO QUEST ▫ CAN DO QUICK STREP TEST
HEALTH FIRST	▫ NO MONO TEST	
PHS	▫ NO MONO TEST	

POL Revenue Generation

It has been previously stated, that in pediatric practices the POL is considered a "service center", which enhances the quality of healthcare rendered to children, and not a "profit center" whose main function, is to generate profits for the organization. Albeit, no discussion about managed care and its effect on POLs is complete without considering how revenues derived from the POL have been affected. Revenues generated from clinical testing at the pediatric group (Table 5) were reviewed for years 1998 - 2000.

Table 5. Revenues generation from POL for years 1998 - 2000

DESCRIPTION	1998	1999	2000
CBC	$ 64,570.37	$ 35, 394.81	$ 53,393.97
MONO TEST	$ 1,560.90	$ 1,152.53	$ 1,446.92
CHOLESTEROL	$ 16,029.26	$ 8,449.33	$ 12,119.01
BUN	$ 275.92	$ 162.07	$ 190 96
BILIRUBIN	$ 951.42	$ 433.97	$ 474.26
GLUCOSE	$ 285.61	$ 1,876.11	$ 1,446.92
URINALYSIS	$ 15,736.10	$ 9,454.42	$ 15,960.28
URINE CULTURE	$ 1,169.38	$ 852.36	$ 915.18
THROAT CULTURE	$111,891.15	$ 78,819.85	$ 81,619.86
RAPID STREP	$159,505.65	$101,422.60	$121,680.24
BLOOD COLLECTION	$ 15,483.09	$ 22,878.87	$ 25, 127.30
HANDLING SPECIMEN	$ 693.66	$ 3,811.20	$ 7,015.10
TOTAL POL REVENUE	$388,152.51	$264,708.12	$321,390.00

There are four significant findings derived from the review of POL revenue over a three year span, namely:

- There was a minus seventeen percent variance in POL revenues generated over the three-year period.
- Revenues from throat culture testing decreased twenty-seven percent. When one considers that there was a concurrent volume decrease of eighteen percent, this leads one to deduct that the reimbursement per throat culture had been slashed.
- A review of revenues derived from Rapid Strep tests indicates that reimbursement decreased twenty-four percent over the three-year period. Keeping in mind that volume variance during this period was a minus sixteen percent, one can assume that the per unit reimbursement for Rapid Strep testing had been cut by the third party payers. This is similar to the throat culture reimbursement cuts.
- The revenues derived from "handling of specimens" increased nine-fold over this period of time. This line item is a reimbursement for preparing and packaging a specimen to be transported to a commercial reference laboratory. The extraordinary nine-fold positive variance in reimbursement for this item is an indication that there is many more laboratory specimens sent to reference laboratories for testing.

Thus, it is obvious, that managed care organizations, in an attempt to decrease the costs of healthcare services and increase, what they consider a more efficient delivery of that care, have negatively impacted POLs by decreasing reimbursement per test and limiting the menu of tests, which an on-site, physician-run clinical laboratory can perform. Appendix C is a representation of payer reimbursements for POL tests in year 2001.

III. Cost Analysis of POL

The final item evaluated in this study is a one-year cost analysis of the pediatric group practice POL. This analysis provided information on financial resources necessary for the upkeep and functioning of the POL. The costs were categorized as "Direct Costs" (wages, rent, supplies, etc.) and "Indirect Costs" (employee benefits, insurance, cleaning, etc). A comparison of total expenditures was then made with the POL revenue for the year, to determine a net income. The year 2000 was chosen for this analysis.

The hypothesis of this study was that clinical laboratory testing by pediatricians is justified, even if it is not a financially "profitable" endeavor. As mentioned previously, in pediatric practices, the POL is considered a "service center" not a "profit center". The results of the cost analysis of the group's POL, however, indicated that it did generate a profit for the practice. The study revealed that the revenues generated by the POL, which accounted for fifteen percent of the gross fee revenues, represented nineteen percent of the organization's gross profits. The cost analysis of the POL is presented in Table 6. Explanations on the dollar amounts used are further described in a series of "Notes" following Table 6. The total expenditures, both direct and indirect, for the POL were $183, 471. This was compared with POL revenues for year 2000, as presented on Table 4, of $ $321,390. From these figures, a POL net income of $137,919 was determined.

Table 6. Cost Center Analysis of a pediatric group practice POL for Year 2000

COST CENTER REPORT Year2000			
PHYSICIAN OFFICE LABORATORY			
DIRECT COSTS			
Laboratorian wages	$ 69,560		Note 1
Laboratory Director	$ 5,200		
Rent	$ 7,000		Note2
Instrument leases:			
Cell Dyne automated CBC	$ 7,200		
Ektachem chemistry	$ 6,000		
Service Contracts			
Cell Dyne	$ 1,528		
Ektachem chemistry	$ 1,623		
Accreditation			
Proficiency testing	$ 1,285		
COLA accreditation and survey	$ 1,035		
HFCA certification	$ 1,250		
Supplies:			
Throat Culture Plates	$ 10,970		Note3
Rapid Strep tests	$ 22,350		Note4
Reagents	$ 6,330		Note 5
General laboratory supplies	$ 18,000		
Total Direct Expenditures	$ 159,331		
INDIRECT COSTS			
Stationary and printing	$ 1,500		
Employee benefits & payroll taxes	$ 14,000		Note6
Miscellaneous	$ 5,000		Note 7
Total Indirect Expenditures	$ 24, 140		
REVENUE POL YEAR 2000	**$ 321,390**		Note8
TOTAL EXPENDITURES POL	**$ 183,471**		
NET INCOME POL YEAR 2000	**$ 137,919**		

The Cost Center Report for the POL has referenced "Notes", which represent explanations or a more in depth description of the line item. For the purpose of the completeness, the "Notes" are as follows:

- Note 1 – total wages for POL staff is $99, 372. It is estimated that thirty percent of staff time is used for duties, other than the POL. The staff also is responsible for assisting physicians, maintenance of examination rooms, performing non-laboratory testing, such as vision, hearing, pulmonary function screening exams, ordering and upkeep of vaccines, etc. Thus, seventy percent of gross laboratorian wages were allocated directly to the POL and thus denote time spent in the performance of duties related to clinical laboratory testing, documentation of laboratory tests and tasks related to compliance with regulatory standards.
- Note 2 – the physical facilities of the POL accounts for approximately two hundred square feet of the office complex, in total. This includes the laboratory proper, storage space for supplies and laboratory records and office space for the Laboratory Manager,. The rent was based on $35 per square foot, which is the rate the practice pays for office space.
- Note 3 – the cost of throat culture testing is based on 13,165 throat cultures performed in year 2000. This is presented in Appendix B.
- Note 4 – the cost of Rapid Strep tests is based on 11,175 tests performed in year 2000. This is presented in Appendix B.
- Note 5 - is based on 3,162 cholesterol, glucose, bilirubin and BUN tests performed in year 2000. This is presented in Appendix B.

- Note 6 – represents seventy percent allocation of $20,000. Payroll taxes are approximately eight percent of the total. Employee benefits include pension, health insurance and workers compensation.
- Note7 – is based on allocations for telephone, electricity, facility insurance and is an estimated dollar amount.
- Note 8 – POL gross revenue for the year 2000 is presented on Table 4 (Revenues generated from POL 1998 through 2000). These figures were prepared by the Billing Manager and represent an accurate accounting of all income from on-site clinical laboratory testing at pediatric group practice POL.

This analysis has yielded two important factors, which will have a major impact in the consideration of the hypothesis and final decision, as to, the continued viability of the group practice laboratory. The first is that the income derived from the POL represents fifteen percent of the gross fee revenues. The second factor is that the POL represents nineteen percent of the over-all gross profit of the organization. The reasons for this will be explored later under the "DISCUSSION" part of this study. It is important to state, however, that these two factors, although a topic of conversation among the physicians of the pediatric group, were never analyzed in depth and thus, the profitability of the POL and its impact on the organization's revenues had not been definitively proven, at any prior time. Making these determinations has enhanced the value of this study.

DISCUSSION

The hypotheses that there is justification for continuing to offer POL services at the pediatric group practice because these services enhance the quality of care available to children, despite limitations imposed by managed care and concerns as to the profitability of POL services, has been proven. This study has demonstrated that:

- Patients and physicians view POL testing as a valuable service and an adjunct to a physician's ability to provide efficient and quality healthcare services to children.
- Managed care does have a negative impact on the volume of testing performed by the pediatric group's POL.
- The revenue generated from the POL was disproportionately decreased, as compared with the negative testing volume variance.
- The POL, despite barriers imposed by managed care organizations, is a "profit center" for the pediatric group.
- Other perceived barriers to POL services, such as regulations posed by CLIA'88 and the availability of professionally trained laboratory technicians to staff the POL, do not have a negative impact on the provision of lab testing services.

Pediatrics and POLs

In 1996, testimony was given before HCFA Practicing Physicians Advisory Council by the Chairman of the American Academy of Pediatrics' Committee on Practice and Ambulatory Medicine[7] in which it was stated that the pediatric office laboratory is

maintained for the convenience of patients, making it easier for patients with sick children to obtain comprehensive medical services in "one-stop". The Pediatric POL is conducive to the rapid diagnosis and the initiation of treatment for children. Unlike other specialties, the pediatric POL is not regarded as a "profit center" for the practice. In rural and other under-served areas, the POL is often the only source of laboratory services for an entire community.

The loss of on-site testing has resulted in more children being sent to emergency departments and admitted to hospitals, because of the inability to obtain a timely diagnostic work-up at the physician's office. Finally, most pediatric POLs perform testing using "micro-methods", that is, only small quantities of blood are necessary for the testing procedure. This method of specimen sample collection consists of the small volume of blood drawn from the child's finger, which will be used for testing. This is in contra-distinction to the vials of blood obtained through venipuncture, which is required by the large commercial laboratories.

For all of the above reasons, on-site POL testing is considered a valuable enhancement to the ability of physicians, and particularly pediatricians in their quest to provide quality and efficient healthcare to children, and therefore is a justifiable service. This study has proven this through testimony offered by physicians and satisfaction with POL services expressed by parents.

Managed Care's Impact on Volume and Reimbursement of POL Tests

A policy paper published by the American Society of Internal Medicine[8] speaks to the issues of third party payers refusing to reimburse physicians for laboratory work done at their office laboratories and the reduction in reimbursement for lab services, far below the level necessary to operate a POL. This has forced physicians to send their patients to outside laboratories. The policy paper argues for maintaining POLs, despite limitations imposed by managed care organizations, and offers recommendations to physicians in negotiating with managed care organizations regarding in-office laboratory testing.

As managed care plans continue to increase their penetration into the healthcare market, their influence over laboratory testing will also increase. A survey conducted by the American Society of Internal Medicine[9] elucidated some of the reasons why a managed care organization requires physicians to send laboratory specimens to commercial labs. The reasons included:

- The plan has negotiated an exclusive, discounted rate with one or more commercial labs (31.8%)
- Independent labs are more cost effective (27.1%)
- Concerns about the quality of lab work performed in physicians' offices (23.3%)
- To control the utilization of lab work performed (15.0%)
- Employers and patients prefer that independent labs perform lab work (2.8%)

In addition, at the time of the survey, sixty percent of managed care organizations responded that they require physicians to send all or some laboratory specimens to independent laboratories, as opposed to on-site POL testing.

The results of this study confirm the fact that managed care organizations are increasingly limiting the ability of POLs to perform testing. At the pediatric group practice, test volume has decreased, as shown by an analysis of presented data. The issue of slashing reimbursement per test performed was dramatically demonstrated by the fact that, there was a ten percent negative variance in POL reimbursement over the three-year period, 1998-2000. Finally, there was a disproportionate negative variance in revenue generation when compared with volume variances.

POL Profitability

An unexpected result of this study is that the group practice POL was proven to be a profit generator for the practice. Previous to this study, an in depth analysis of the POL cost center was never performed. Anecdotally, the physicians of the practice, assumed that the POL was a neutral line item and if any profit was generated, it was minimal. However this study has shown that the income derived from the POL represents fifteen percent of gross income and, more significantly, the POL accounts for nineteen percent of the over-all gross profits of the organization.

The reasons contributing to the profitability of the practice's POL, would include:

- On-job training of laboratory staff, which eliminates the need for high-salaried laboratory scientists and technicians. This is not the result of a plan not to hire professional laboratorians, but is due to competition for technicians with hospitals and large commercial laboratories. Therefore, what may have originally been

considered a barrier to on-site lab testing, that is, the lack of accessibility of professionals is actually a beneficial factor, as far as profit margin is concerned.

- A practice physician holds the Laboratory Director position, and the salary allocation for this position is minimal. The Laboratory Director oversees the function of the POL in regard to quality issues, compliance with regulations and accreditation guidelines, staff competence and setting policy for the POL. The Director must attend periodic laboratory education programs and demonstrate competence in directing a laboratory by successfully passing all laboratory on-site surveys and audits by the accreditation agency. This position, if filled by an outside consultant, would call for a nine-fold increased monetary allocation for these services.
- Laboratory expenditures have been kept to a minimum because staff is required to provide duties in the practice, other than simply testing and maintaining the laboratory. It is estimated that thirty percent of a laboratorian's time is consumed with assisting physicians and performing non-clinical testing.
- The POL at the pediatric group practice is compact but yet there is adequate space reserved for all testing procedures and storage of materials. Because of this, rental allocation is minimal, at seven thousand dollars per year.

Thus, this study has proven that if a POL is managed well and if there is an awareness of efficiency and willingness of all staff involved to be part of the practice's "team", a POL can and does generate profits for the organization.

Additional Barriers to POL Services

The passage of CLIA'88 had caused concern that laboratory sites, especially POLs, which had been exempt from regulations prior to this time, might cease to exist.[10] However, a study by the Office of the Inspector General (OIG) found that CLIA '88 did not appear to have affected the physician's ability to secure laboratory services for patients. Instead, the OIG came to the conclusion that those physicians, who changed their in-office laboratory procedures by discontinuing their POL, did so for other reasons, namely, other government regulations, sales and mergers, and managed care. The OIG reported that CLIA '88, had some effect on volume and types of tests being billed by POLs, with more waived testing procedures being done.

CLIA "88 is a set of rules and standards, which has far-reaching impact on every facility that performs even minor laboratory testing. Congress passed this legislation in 1988, however it was not implemented until 1993. The purpose of the legislation was a desire by legislators to improve a perceived deficiency in the quality of medical clinical testing. Oversight of CLIA was assigned to HFCA (now known as CMS). CLIA "88 is responsible for:

- Setting up a set of standards for all clinical laboratories
- Establishing and collecting application and user fees based on laboratory volume
- Enforcement of the policies and procedures established as CLIA standards
- Approval of clinical laboratory accreditation organizations, such as COLA

Lab tests, under CLIA '88 were categorized into three levels - waived, moderate complexity and high complexity. The legislation mandated several standards, which included: personnel standards, quality control, quality assurance, creation of policy and procedure manuals, patient test tracking and management, proficiency testing, inspections and sanctions. [11]

The pediatric group under study has successfully complied with all standards proscribed by CLIA "88. The laboratory has excelled in proficiency testing, on-site surveys by accreditation agencies and has never been cited for deficiencies or lack of quality testing. Although, CLIA '88 has resulted in increased documentation and administration by management and staff, it has improved the quality and delivery of laboratory services provided by the practice. This has been borne out through positive testimony by both physicians and patients, which has been reported in this study.

The final issue, in regard to regulatory oversight, is the increasing availability of test systems targeted for physician's offices, which simplify testing processes and assessment of analytical test performance. [12] Many of these tests meet the criteria of being waived by CLIA '88 and thus, many POLs are using waived tests with very limited regulatory oversight. The community physicians queried for this study, all stated that they were currently using or planning to perform more waived testing in the future.

Tests are considered waived, if they are simple to run, the results are almost fool proof, and an erroneous result does not have a negative impact on the patient. [13] The Food and

Drug Administration regulate these tests. CLIA requires that laboratories performing waived tests need to follow manufacturers instructions and to obtain a "Certification of Waiver" certificate. This form of POL testing, although waived, is not exempt from all CLIA '88 standards. HCFA (CMS) is currently considering the possibility of nation-wide inspections for waived laboratories.

Accessibility of Laboratory Technicians

In recent years, there has been increasing competition for the services of professionally trained, credentialed laboratory scientists and technicians. Many of these professionals, currently are not involved in routine laboratory testing, but are now in managerial and research positions. Currently, high school graduates, who have been trained by the laboratory manager and director, staff the pediatric group's POL. This study has shown that the practice's POL has been a profit center, in part, because it does not utilize professionally trained technicians, who demand large salaries.

Some studies have indicated, however, that POLs who do not use laboratory professionals, have unsatisfactory failure rates on proficiency testing, about one and one-half times those POLs, which employ certified technologists. [13] The authors concluded that testing personnel in many POLs, lack the necessary education, training and oversight common to larger facilities, whose proficiency testing results are three times better.

In view of the above study, it is incumbent on the Laboratory Director to ensure that lab staff, fully understand laboratory practice, in order to sufficiently minimize errors and

maximize accuracy and reliability. Non-technical laboratory staff must be scrutinized through competency assessments and those who fail should not be allowed to participate in laboratory testing. (15) Thus, even though this study demonstrated that non-professional, on-site trained employees have adequately performed their responsibilities and that the lack of a laboratory scientist (professional technician) has not been a barrier to maintaining the POL, it is essential that periodic competency testing be performed.

CONCLUSION

This study has proven that there is justification for maintaining a POL in a pediatric practice. It has been shown that patients and physicians believe that a POL improves and facilitates the healthcare of children. Managed care does have a negative impact on the POL by restricting the types of tests done and decreasing reimbursement for the tests, which the third party payer is willing to cover. However, a POL can generate a profit for a practice, if it is efficient and managed well. Use of on-site trained laboratory personnel can also contribute to the profitability of the POL. These non-professional lab staff need to be monitored and tested periodically to assure their competency and understanding of laboratory policies and procedures.

CLIA '88 regulations may also present a barrier to physicians who wish to perform in-office laboratory testing. Adherence to the CLIA '88 standards improves the quality of clinical testing, and should be embraced as a necessary and beneficial modality, which helps assure quality patient testing. CLIA regulations should not perceived as a "hassle

factor" to deter physicians from performing tests in their office. Performing waived testing may prove to be an alternative to discontinuance of in-office clinical testing, for some physician practices, which are unable or unwilling to perform the rigorous oversight, legislated by CLIA '88.

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APPENDIX A –Pediatric Group's

Patient Satisfaction Survey

Dear Parent,

We are asking your help in filling out this short questionnaire to determine how our patients rate our office laboratory and whether they feel that it is a beneficial service for the your child's pediatricians to offer. The questionnaire will take about five minutes to answer and is anonymous, in that you do not need to identify yourself or your child. There are ten questions and you respond by simply circling your answer. Please circle only one choice, which may be AGREE or DISAGREE or NOT SURE. Also, it is important that you answer all of the questions. There are no right or wrong answers. You are simply giving your opinion.

QUESTIONNAIRE

(Circle one answer only)

1. **My child or children have had laboratory testing at my pediatrician's office clinical laboratory at least once.**

   AGREE DISAGREE NOT SURE

2. **It is important that my child be able to have laboratory testing in my pediatrician's office instead of at "outside" commercial laboratory.**

   AGREE DISAGREE NOT SURE

3. **The laboratory staff is courteous and caring while taking the specimen to be tested.**

   AGREE DISAGREE NOT SURE

4. **The laboratory staff is conscientious in their cleanliness, use of disposable gloves and properly discarding needles and other supplies used in taking the sample to be tested.**

   AGREE DISAGREE NOT SURE

5. **In general, it is easy for me to obtain laboratory results on my child.**

   AGREE DISAGREE NOT SURE

6. **I feel confident that tests performed at the office laboratory are accurate and correct.**

   AGREE DISAGREE NOT SURE

7. **I am aware that the office laboratory and staff have been tested and reviewed to determine that they are properly performing laboratory tests and that the results are correct.**

   AGREE DISAGREE NOT SURE

8. **One of the reasons, why I joined my pediatrician's group practice and continue to use the doctors here, is that laboratory tests can be done at the office.**

   AGREE DISAGREE NOT SURE

9. **I have told other parents about the laboratory services, my child's pediatricians offer.**

   AGREE DISAGREE NOT SURE

10. **I have recommended new patients to this pediatric practice, in part, because of the availability of laboratory services.**

    AGREE DISAGREE NOT SURE

Thank you for completing this questionnaire. Please return it to one of our staff persons before leaving.

APPENDIX B - Laboratory Testing Survey

PEDIATRIC GROUP LABORATORY SURVEY FOR 1998

MONTH	CBC	CHOL	UA	UC	TC	MONO	BILI	GLU	BUN	RAP ST.	TOTAL
JANUARY	596	217	239	19	1754	39	8	9	8	1332	**4221**
FEBRUARY	505	193	221	22	1356	41	13	5	13	1103	**3472**
MARCH	518	228	238	18	1546	50	34	12	23	1268	**3935**
APRIL	490	264	263	22	1228	32	17	8	5	1037	**3366**
MAY	593	440	498	36	1326	27	18	12	8	1073	**4031**
JUNE	726	595	199	21	1172	19	8	13	6	820	**3579**
JULY	401	281	44	23	769	11	8	11	6	607	**2161**
AUGUST	576	400	56	10	838	21	6	4	2	616	**2529**
SEPTEMBER	444	299	18	16	950	29	8	5	3	822	**2594**
OCTOBER	416	230	13	17	1321	20	16	10	6	1142	**3191**
NOVEMBER	406	200	30	18	1396	26	10	6	6	1216	**3314**
DECEMBER	390	127	12	8	1563	24	12	12	9	1363	**3520**
TOTAL	**6061**	**3474**	**1831**	**230**	**15219**	**339**	**158**	**107**	**95**	**12399**	**39913**

1998 TOTAL— **39913**—

PEDIATRIC GROUP LABORATORY SURVEY FOR 1999

MONTH	CBC	CHOL	UA	UC	TC	MONO	BILI	GLU	BUN	RAP ST.	TOTAL
JANUARY	558	197	17	18	1695	47	6	10	14	1072	**3644**
FEBRUARY	333	162	25	9	1239	14	5	5	9	790	**2591**
MARCH	438	242	20	15	1464	39	7	12	13	1243	**3493**
APRIL	388	246	24	11	1006	23	8	5	5	902	**2618**
MAY	495	364	30	22	1078	31	7	13	8	938	**2986**
JUNE	479	300	26	14	684	17	8	8	4	620	**2160**
JULY	382	217	32	17	720	19	14	4	5	618	**2028**
AUGUST	474	333	75	16	763	27	7	7	6	615	**2343**
SEPTEMBER	347	230	56	20	898	22	12	4	3	754	**2346**
OCTOBER	362	197	88	24	1430	22	12	9	2	1085	**3031**
NOVEMBER	250	123	67	19	1238	24	9	2	2	1122	**2856**
DECEMBER	286	110	105	15	1585	27	10	3	6	1472	**3619**
TOTAL	**4792**	**2721**	**565**	**200**	**13820**	**312**	**105**	**82**	**77**	**11231**	**33905**

1999 TOTAL— **33905**—

APPENDIX B – Laboratory Testing Survey (continued)

PEDIATRIC GROUP LABORATORY SURVEY FOR 2000

MONTH	CBC	CHOL	UA	UC	TC	MONO	BILI	GLU	BUN	RAP ST.	TOTAL
JANUARY	408	133	109	20	1307	36	8	4	5	534	**2564**
FEBRUARY	523	197	184	0	1430	8	6	16	9	1311	**3684**
MARCH	583	236	229	16	1471	38	7	4	7	1381	**3972**
APRIL	522	262	247	7	1210	28	11	10	3	917	**3217**
MAY	596	255	289	25	1140	4	9	23	18	785	**3144**
JUNE	897	497	621	15	1024	24	9	5	3	1441	**4536**
JULY	404	100	229	6	708	25	12	2	5	495	**2076**
AUGUST	620	383	385	14	705	27	17	6	5	482	**2644**
SEPTEMBER	543	277	314	11	1107	24	10	9	3	679	**2977**
OCTOBER	424	168	199	20	1143	17	5	2	0	701	**2679**
NOVEMBER	512	148	221	31	921	17	8	8	6	1081	**2953**
DECEMBER	518	127	163	19	999	20	6	8	18	1368	**3248**
TOTAL	**6550**	**2873**	**3190**	**184**	**13165**	**268**	**110**	**97**	**82**	**11175**	**37694**
2000TOTAL	37694										

PEDIATRIC GROUP LABORATORY SURVEY FOR 2001

MONTH	CBC	CHOL	UA	UC	TC	MONO	BILI	GLU	BUN	RAP ST.	TOTAL
JANUARY	498	141	162	19	2001	35	15	10	10	1099	**3990**
FEBRUARY	958	281	342	42	2148	70	22	21	30	2264	**6178**
MARCH	441	148	192	18	946	53	21	14	18	630	**2681**
APRIL	413	222	214	19	877	24	13	12	10	732	**2536**
MAY	569	265	381	24	896	23	7	11	9	748	**2935**
JUNE	606	366	450	15	634	20	1	8	6	525	**2631**
JULY	473	283	339	19	427	16	0	9	7	381	**1954**
AUGUST	586	423	421	28	424	13	0	9	3	437	**2344**
SEPTEMBER	340	175	189	18	525	28	1	4	6	460	**1748**
OCTOBER	417	179	211	26	837	34	3	12	4	596	**2319**
NOVEMBER	471	153	183	17	1406	24	0	7	3	1148	**3412**
DECEMBER	413	121	141	19	1404	28	0	4	5	1191	**3326**
TOTAL	**6185**	**2777**	**3205**	**264**	**12527**	**368**	**83**	**121**	**113**	**10411**	**36054**
2001TOTAL	36054										

APPENDIX C – Reimbursement for Laboratory Testing by Health Care Plans

TEST	CODE	AET/US HC	BC/BS	CIGNA	GHI	OXF	UNITED	EMP PL	MCD	PHS
BLOOD COLLECTION	36415	$ -	$12.00	$ 4.15	$ 2.00	$ 4.00	$ 3.50	$ 6.00	$ -	$ 4.00
URINALYSIS	81000	$ -	$ 6.00	$ 4.07	$ 5.00	$ 2.85	$ 3.00	$ 2.84	$4.00	$ 6.00
BILIRUBIN	82250	$ -	$ 8.00	$ -	$ -	$ 3.45	$ -	$	$	$ -
CHOLESTEROL	82465	$ -	$ 5.00	$ 5.60	$ 6.00	$	$ 4.50	$ 4.50	$	$ 5.00
GLUCOSE	82948	$ -	$	$	$	$	$ -	$	$	$ -
BLOOD UREA NITROGEN	84520	$ -	$	$	$	$	$ 2.00	$	$	$ 1.92
COMPLETE BLOOD COUNT	85024	$ -	$14.00	$11.49	$ 8.00	$11.70	$ 3.00	$11.63	$3.80	$14.00
SEDIMENTATION RATE	85651	$ -	$ 2.80	$ 4.56	$ 4.00	$ 2.49	$ 2.00	$	$2.00	$ 2.80
MONONUCLEOSIS TEST	86308	$ -	$ 4 50	$ 6.65	$ 8.00	$	$ -	$	$	$ 4.50
RAPID STREP TEST	86317	$ -	$20.00	$ -	$18.00	$	$16.00	$ 22.10	$	$20.00
RAPID STREP TEST	86403	$ -	$	$13.10	$	$	$ 3.00	$	$	$
STREP CULTURE	88588	$ -	$	$19.50	$	$ 6.89	$ -	$	$	$
NOSE/THROAT CULTURE	87060	$ -	$	$ 9.94	$	$ 7.13	$ 5.00	$ 5.00	$	$ 8.44
THROAT CULTURE	87091	$ -	$ 6.00	$ 8.52	$ 9.00	$ 6.89	$ 4.00	$17.80	$3.75	$ 6.00

* Not covered by third party payer

Appendix D– Descriptive Statistics for Throat Culture Volume 1998-2001

Throat Culture Vol.	Year 1998
Mean	1268.25
Standard Error	86.0164823
Median	1323.5
Standard Deviation	297.9698353
Sample Variance	88786.02273
Kurtosis	-0.510046971
Skew-ness	-0.299064676
Range	985
Minimum	769
Maximum	1754
Sum	15219
Count	12
Largest(1)	1754
Smallest(1)	769

Throat Culture Vol.	Year 1999
Mean	1135
Standard Error	96.54564002
Median	1154
Standard Deviation	334.4439075
Sample Variance	111852.7273
Kurtosis	-0.995352617
Skew-ness	0.241934225
Range	1011
Minimum	684
Maximum	1695
Sum	13620
Count	12
Largest(1)	1695
Smallest(1)	684

Appendix D (continued)– Descriptive Statistics for Throat Culture Volume 1998 - 2001

Throat Culture Vol.	Year2000
Mean	1097.083333
Standard Error	70.84944113
Median	1123.5
Standard Deviation	245.4296634
Sample Variance	60235.7197
Kurtosis	-0.490520667
Skew-ness	-0.191315185
Range	766
Minimum	705
Maximum	1471
Sum	13165
Count	12
Largest(1)	1471
Smallest(1)	705

Throat Culture Vol.	Year 2001
Mean	1043.917
Standard Error	167.4116
Median	887.5
Standard Deviation	579.9308
Sample Variance	336319.7
Kurtosis	-0.19468
Skew-ness	0.904725
Range	1724
Minimum	424
Maximum	2148
Sum	12527
Count	12
Largest(1)	2148
Smallest(1)	424