Evaluation of Use Biochemical Diagnostics in Primary Health Care: Example of Quality Assesment

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ORIGINAL PAPER

SUMMARY

Problem: Laboratory medicine, medical-biochemical diagnosis in primary health care is much represented. By organization of family medicine medical-biochemical diagnosis is defined as a branch of diagnostic services in primary health care. For these actions is necessary in the morning prior to admission of users and their demands that all jobs are properly prepared. On previous day should be provided and prepared: accessories, reagents and machines. Morning daily routine work of preceding control and calibration equipment, methods and process quality control of work in the laboratory. Only after the fulfillment of the procedures followed overview of search control of samples. After validating the results of daily quality control and after they met the criteria can be analytically examined samples from users. These procedures are not sufficiently familiar to users and doctors, for that are very often necessary the direct telephone communication between them. To make the results of laboratory tests needed are huge material resources. This is evident in the economic analysis where laboratory tests are valued with a score of: search by type and material resources expended for analytical examination. These technical and financial performances of laboratory medicine are not appropriately classified as blatant as that in other industries, technology and other primary health care (PHC) and family medicine (FM). **Goal:** The overall objective of the research is to define a model of efficiency (or effectiveness) of medical-biochemical diagnosis for users with the requirements of units of family medicine (FM), in a representative sample of patients in the unit for the laboratory diagnosis of the Primary Health Care Center Gracanica. Confirm what is the usefulness of the application of laboratory diagnosis in family medicine. Determine the frequency of the need for laboratory tests in the therapeutic treatment of major diseases. Evaluate the need for using laboratory diagnostics to try to prevent major diseases. **Material and methods:** The study included a total of 1000 respondents. All subjects were users of primary health care in Primary Health Care Center Gracanica (Tuzla Canton) in primary health care units have received requests for laboratory diagnosis. This paper is an analysis of the representation requirements for the laboratory diagnosis by doctors in primary health care and the most frequent diseases in primary care. An analysis is made of laboratory test results, based on requests for laboratory diagnosis by doctors and illnesses in primary care. Made is analysis of the presence of normal and pathological laboratory test results from the request for the laboratory diagnosis by doctors in primary health care. Made is an analysis of the most common laboratory tests requests, and based on requests for laboratory diagnosis by doctors in primary health care and the most frequent diseases in primary health care. Incorporated is the economic analysis of laboratory test requests for the laboratory diagnosis by doctors in primary health care and the most frequent diseases in primary care. Incorporated is the economic analysis of the most common laboratory test requirements for the laboratory diagnosis by doctors in primary health care and the most frequent diseases in primary health care. For the statistical analysis are used the Student t test and Chi square test. **Results and Conclusions:** Based on the obtained parameters and results of laboratory tests can be determined: prevalence, benefit, benefits of certain tests (test profile search) laboratory diagnosis: the systematic reviews, for the prevention of health; tests to monitor disease (criteria, standards, i.e. protocols for diagnosis). But it is proved that the laboratory diagnosis is not used rationally. It also suggested better communication and organization of family medicine and laboratory diagnosis when it comes to common diseases and facilitate the exchange of information with other health care institutions which may be of wider public interest.
Key words: Laboratory Technology, Methods, Procedures, Quality control, Economic aspects, Standardization, Rationalization of laboratory diagnosis in family medicine.

1. INTRODUCTION

Health care reform is a costly process, which, among other things, bringing the patient closer to the medical staff. All should take part because reform is not only the proportion of the budget, and health is still not financially independent. Since 1996 when it was adopted in the Federal Program of Reconstruction of the Health System at the Federation level, is gone furthest in reforming primary health care. Our study may be important for primary health care system content and that decision makers put the accent

in the reform process in the sense that the new methods, models, funding and organizational processes to rationalize the system of healthcare services by introducing modern technology, but more rational and cost-effective method and procedures (1).

It is a known fact that the network of health care provided at local community level, in addition to providing medical care (diagnosis, treatment and rehabilitation) is realized number of other activities aimed at improving and preserving health. Primary health care (PHC) is the first professional level of medical care for more than 90% of health requires for treatment at that level. PHC focuses on major health problems of the community and allows the creation of developmental, preventive, curative and rehabilitative activities. These activities reflect a country's social values and develop in line with economic opportunities, and they differ in various countries. In fulfilling their tasks of PHC uses certain technologies, typical for it (or those commonly used in primary health care). And no health system can function without some of them. Great presence in this has the so-called medical diagnostic technologies.

Modern technologies of today require teamwork. There is a danger that decisions are made solely on the basis of the findings of technical devices. However, an expert in his field must identify and decide which diagnostic algorithm to apply without excessive and unnecessary tests and procedures to save time for the whole process of working up to the final diagnosis to be a fast, of high quality, rational and appropriate. Among the most commonly used laboratory diagnostic technologies are: hematological, biochemical technology, diagnostic testing and others. But medical and diagnostic technologies have great economic value.

Medical biochemistry laboratory diagnosis occupies a visible place in medicine, in all levels of health care, as well as material costs of primary, secondary and tertiary health care, because modern laboratory diagnostics, using different technologies and methods a physician can reach a lot of useful information about the status of the patient influence: standards, lifestyle, genetics, disease, drugs. In order to rationally utilize laboratory equipment and skilled personnel, and enabling conscientious use of best evidence for decision making in diagnosis and treatment is necessary to better define indications for specific tests. It is estimated that at least 20-30% of money spent in health care can be rationally used and the focus of control should be placed precisely on diagnostic services. A significant segment: the diagnostic activities dominated medical biochemistry, laboratory work and it is irrational to spend a significant percentage of the funds from the total health budget (1). Therefore, Health Insurance has to be the permanent control and intervention undertaken, not only to identify the irrational consumption in the previous period (1,2,3,4,5,6).

2. GOALS

Goal: The overall objective of the research is to define a model of efficiency (or effectiveness) of medical-biochemical diagnosis for users with the requirements of units of family medicine (FM), in a representative sample of patients in the unit for the laboratory diagnosis of the Primary Health Care Center Gracanica.

- Confirm what is the usefulness of the application of laboratory diagnosis in family medicine.
- Determine the frequency of the need for laboratory tests in the therapeutic treatment of major diseases.
- Evaluate the need for using laboratory diagnostics to try to prevent major diseases.
- Promote the available test-index profile of laboratory diagnostics for early detection of risk factors for major diseases.
- Evaluate the continued use of the (systematic reviews) laboratory diagnosis gives a picture of the health status of individuals in family practice.
- Promote the available test-index profile of laboratory diagnosis of systematic reviews.
- Conduct follow-up evaluation model of laboratory diagnosis in family medicine.
- Determine the cost/benefit analysis of the financial effect of the use of laboratory diagnosis in family medicine.
- Determine the cost/benefit analysis of the financial effect of the use of laboratory diagnostics in major diseases in family medicine.
- Determine the cost/benefit analysis of the financial effect of the use of laboratory diagnostics with the requirements of normal laboratory test results in family medicine.

3. MATERIAL AND METHODS

The study included a total of 1000 respondents. All subjects were users of primary health care in Primary Health Care Center Gracanica (Tuzla Canton) in primary health care units have received requests for laboratory diagnosis.

This paper is an analysis of the representation ***requirements*** for the laboratory diagnosis by ***doctors*** in primary health care and the most frequent ***diseases*** in primary care.

An analysis is made of laboratory test ***results***, based on requests for laboratory diagnosis ***by doctors*** and ***illnesses*** in primary care.

Made is analysis of the presence of ***normal and pathological laboratory test results*** from the request for the laboratory diagnosis by doctors in primary health care.

Made is an analysis of ***the most common*** laboratory ***tests*** requests, and based on requests for laboratory diagnosis by ***doctors*** in primary health care and the most frequent ***diseases*** in primary health care.

Incorporated is the ***economic analysis*** of laboratory test requests for the laboratory diagnosis by ***doctors*** in primary health care and the most frequent ***diseases*** in primary care. sIncorporated is the economic analysis of the ***most common*** laboratory test requirements for the laboratory diagnosis by ***doctors*** in primary health care and the most frequent ***diseases*** in primary health care.

For the statistical analysis are used the Student t test and Chi square test.

4. RESULTS

Our research has shown there is in efficient allocation of laboratory tests by level of health care, which also needs to define new rules of the profession. In primary health care in family medicine is defined: ***The use of laboratory***

diagnostics according to the guidelines of family medicine, PAT 2008/2009 for certain diseases. True, it is not prescribed that use of these protocols is not adapted to our requirements, but there is intention to use them. The research we conducted shows that users often have a primary health care need for many secondary level tests, and even tertiary level. In our study, involving 1000 users of laboratory diagnostics at the Primary Health Care Center is in a non-selective manner realized a total of 5333 following laboratory tests: urine, ESR, CBC, glucose, total cholesterol, HDL cholesterol, triglycerides, total bilirubin in the blood, aminotransferase (ALT, AST), alkaline phosphatase (AF), urea, creatinine, Acidum uricum, fibrinogen, CRP, serum calcium, serum phosphorus, CK and GGT. In 1000 demands, with highest % was identical to the following required tests: 14% glucose, WBC, urine, and10.3 % SE, 8.5% lipids, 6.7%, ALT, AST and creatinine. It is interesting to note that there is no statistically significant difference in the number of test required by physicians at the outpatient clinic from family practice clinics of general practitioners and family medicine. General practitioners have demanded a total of 5333 tests or 44%. Percentage requested most frequently are the following tests: glucose 14.5%, 13.4% of the urine, 13.0% PS, 9.8% SE, 9.6% lipids, 6.8% of ALT, AST, and creatinine 7.0%. WBC, glucose, lipid profile and urine were most frequently found in the requirements of GPs in the 54-80% of cases. Representation of the most common test requests in a general practitioner in percentage was: glucose 80%, urine 75%, HP 72%, 55%, 54% lipids and ALT, AST 36%.

Family Medicine Doctors have demanded 40.7% of tests. The most common are the following required tests: 13.5%–glucose, 12.7%–HP, 12.6%–urine; 10.5%–SE, 8.7%–lipids, 7.4%–ALT, AST and 6.0%–creatinine. So, SE, WBC, glucose, lipid profile and urine tests are the most common requirements in family medicine doctors in 50-78%. Representation of the most common tests in the demands of family medicine doctors in percentage is: glucose–78%, urine–73%, HP–74%, SE–60%, lipids–50% and ALT, AST–43%.

Hammer-Plećaš alleges that the executives of laboratories constantly are faced with making decisions: whether and how to change the organization, equipment, measurement procedures and others. Our research indicates the increase in the use of laboratory tests. This increase can be explained:

- *Increasing demands for health care* (aging population, the rise of chronic diseases, screenings, control over the quality of work);
- With the fact that the tests become *more available*;
- Requires that *use new technologies*;
- *Pressure* of the patients;
- *Fear* of medical complaints and litigation;
- *Delays* in the decision of a doctor.

From the laboratory diagnosis requirements is not seen a significant difference in the need by family medicine physicians and general practitioners in the requirements for the tests: SE, glucose, WBC, urine, lipid levels, ALT and AST. Other specialists have demanded 15.3% of test. Percentage of most frequently requested are the following

tests: WBC, blood glucose and urine in the requirements of other specialty physicians in the outpatient clinic in 57-81%. Representation of the most common tests in the requirements of other specialty physicians in the outpatient clinic percentage is: HP–81%, urine–76% glucose–57%, SE–47%, ALT and AST-22.3%, and lipids–18%. The doctors of other specialties, with the exception of specialists in family medicine outpatient clinic have a different % for testing. These results suggest that the continued use of the laboratory diagnosis is unquestionable in the health care of individuals in family practice. It is a family practice for the 797 users of laboratory diagnostics require 4515 tests. The most common laboratory tests in family practice: GLUCOSE, WBC, urine, SE, cholesterol, triglycerides, ALT, AST, creatinine and urea. Laboratory tests: blood glucose, WBC, urine, SE, cholesterol, triglycerides, ALT, AST, creatinine respectively represented the most common found in the demands of family practice doctors in 36-80% required. To strictly apply the use of laboratory diagnostics according to the guidelines of family medicine, PAT 2008/2009, we would certainly have different indicators.

The aim of diagnostic tests is to increase the likelihood of ratification of a certain diagnosis by the doctor. The doctors who save lives and use requirements for laboratory tests are often not the expected response, so they tend to take the laboratory diagnosis very seriously. Requirements for laboratory diagnosis from a doctor in family practice contain a different number, or a variety of laboratory tests for diseases. Requirements for analysis of laboratory tests for diseases may be effectively used to establish optimal statistical and economic models of protocols, guidelines with regard to cost and utility results in family medicine. Number of required family medicine physician can point to the importance, usefulness, efficiency of laboratory medicine. Percentage of requirements by general practitioners was 42.2%, followed by family medicine doctors 37.5% at the end of other specialists in PHC was 20.3%. The number, frequency of required laboratory tests for the diagnosis of doctors different analysis can show the effect of the use of laboratory tests at major diseases.

Representation of certain groups of diseases in this period shows that in the highest proportion represented: Diabetes mellitus (24.8%), followed by respiratory diseases (20.2%), urinary system disease (19.8%), followed by hypertension (15.0%) and diseases of muscles and bones (10%). In doing so, we should bear in mind that the leading causes of mortality in Tuzla Canton (TC) are: CVD (50%), malignant diseases (20%), followed by deaths caused by diabetes, respiratory diseases and deaths caused by diseases of the digestive system.

In 2008 in primary care of TC 40% of diseases are represented by the following scheme:

- Respiratory diseases and most patients 1-6 years of age,
- CVD
- Diseases of the urinary and genital organs,
- Illnesses with reported pathological clinical symptoms and laboratory findings,
- Muscle-bone system disease and connective tissue.
- Laboratory diagnosis in our study is an important

diagnostic tool in family practice at the major diseases:

- Metabolic syndrome
- espiratory diseases,
- Diseases of the urinary system
- CVD,
- Muscle-bone system diseases and connective tissue.

Analysis of requirements and % of laboratory tests, shows almost identical and a broad need for laboratory diagnostics in the most frequent diseases as well as treatment in primary health care or family practice. But the percentage representation of the most common tests for the leading diseases in family practice at the Primary Health Care Center Gracanica shows the selectivity of the required test for diseases. Some tests require a much more general practitioners than specialists in family medicine, such as urine, WBC, glucose in respiratory diseases. But the doctors of family medicine require a lot more than test lipid general practitioners in the diagnosis of urinary diseases. Family Medicine doctors are much less demanding: urine, WBC, glucose, cholesterol, triglycerides, ALT, AST, respiratory diseases than general practitioners. Especially family medicine physicians, respiratory diseases (J00-J99) sought much less urine analysis and WBC than general practitioners. This is not the case with urinary (NOC N99) diseases, where doctors are family medicine looking with a much higher frequency of blood glucose, Chol, tgl., ALT and AST compared to general practitioners. In case of muscular bone diseases (MOO-M99) the number of test requests: glucose, Chol., tgl., ALT and AST in family medicine is much higher.

Analysis of individual groups of diseases show that in most patients is represented the metabolic syndrome and the percentage representation of the most common test for the leading diseases are metabolic syndrome, respiratory, musculoskeletal and urogenital diseases in the demands of family practice doctors in the PHC, showed a significantly higher percentage prevalence with the most common test: cholesterol, triglycerides, glucose requirements in the metabolic syndrome in the family medicine doctor. Therefore, the norms that prescribe requirements for laboratory operations (ISO / IEC 17025, ISO 15189) required metrological approach to the process of measurement, requiring validation / verification method, metrological traceability, security, knowledge of uncertainties, monitoring trends in the measurement process, etc.

Ideally, the physician, require laboratory tests, whose results after the analysis will with 100% probability determine the presence or absence of disease that is to confirm the working diagnosis.

It is common that when you get a pathological result of a diagnostic test, probably will order a series of additional tests to find the reason for its positivity. Analysis of the results of laboratory tests required for diagnosis by the requirements of physicians in family medicine indicates that supplementary tests have the same effect in major diseases. Therefore there is need to apply the protocols for laboratory tests or the use of specific test profiles. We should not ignore the need for specific screening, such as hepatitis, the metabolic defects, and the diabetes that can have long-term benefits for health care. The decision on whether to

introduce a test in the best practice is based on the results of randomized clinical diagnostic studies. There are many open questions: It is essential that this study assessed the combined effect of tests and treatment. Means that the protocol for making decisions based on the test results will be determined in advance.

Some authors suggest a gradual assessment of the effectiveness of the test: to examine the diagnostic accuracy, value added and implications for treatment. Finally, we shall examine how the test result affects the outcome and make the economic assessment (1).

There's still no satisfactory way to estimate the test and thereby cover all the outstanding issues. Therefore, only further retest will enable the selection of ideal parameters or the test.

Cost analysis of rational laboratory diagnosis can be financially very profitable in health care leading to increased diseases such as metabolic syndrome. Thus, an economic analysis is done; the findings in the study may show how much the price of the carried out tests, as well as the price of other material costs. Price and number of laboratory tests can be used to reform health care, laboratory medicine and family medicine, or to create, define standards and norms, and if necessary their correction. This definitely promotes evidence-based medicine. Application of laboratory evidence-based medicine is an economically challenging and should be the aim of lowering health care costs with the tendency toward harmonization of the product, the manufacturer of diagnostic products, analyzers and reagents at a lower cost and with better application in all parts of the world.

Valid STANDARDS AND NORMS for primary health care state that laboratory activity provides a working team on 37 000 insured persons, a number of services per user per year is 0.85 which is 31 450 tests annually. The annual value of the compensation program for the work of the team is 188 500 points. So for 1000 insured is 850 test or 5094.6 points.

The results of our study suggest that the 1000 users was done 6.3 times more tests, or the value of compensation should be 16.5 times more points than the standards and norms.

There are indications that diagnostic technologies spend a significant portion of our healthcare resources. Doctors often have a false impression that there are cheap diagnostic tests, particularly laboratory tests. However, their cumulative effect on the total cost is enormous and constantly growing. To ensure the costs of laboratory diagnostics at the PHC in Gracanica 3 years are on the rise:

- In 2007, the cost for reagents amounted to 75 530.4 KM;
- In 2008 the cost of reagents was 90 KM 121.78;
- In 2009 the cost of reagents was 98 KM 103.23.

Analytical review laboratory tests have its economic value expressed in points. So the economic value of 5333 laboratory tests in *1000 required* in our study is 84 312 points (100%). The economic value of tests that are required general practitioners was 37 190 (44.1%) points.

The economic value of tests that are required family medicine doctors is 33 681 (40%) points. The economic

value of tests that are required by specialists: pediatricians, gynecologists and specialists in occupational medicine was 13 441 (15.9%) points. A similar is % representation of test and evaluation of the test points for general practitioners and family medicine, and 44% of the share index of GPs and 40.7% share index doctor of family medicine and 15.3% of test by specialists. General practitioners the most demanded following tests: glucose, urine, WBC, SE; TGL; Chol, ALT, AST, creatinine, which amounted to 34 109 points (40.5%). Doctors Family Medicine (FM) the most required the following tests: glucose, WBC; urine, SE, Chol, TGL, ALT, AST, creatinine, which amounted to 29 914 points (35.5%). Other specialty doctors in primary health care the most demanded in a following order these tests: WBC; urine; Glucose, SE, creatinine, ALT, AST, Chol, TGL, which amounted to 12 504 points (14.8%). It is a different number of points required for tests by diseases.

The largest costs are in diseases Diabetes mellitus (E00-E90) that is 25.2% points where the most common tests were: urine; WBC; glucose, cholesterol and triglycerides and total carry 14 530 (17.2%) points. Followed by the test costs for respiratory diseases (J00-J99), or 20.2% of points where the most common tests were: urine; WBC, glucose, total cholesterol and triglycerides carry 11 323 (13.4%) points. Then follow the test costs of urinary tract disease (N00-N99), i.e. 28.4% of points where the most common tests: urine; WBC, glucose, total cholesterol and triglycerides carry 12 062 (14.1%) points.

Test the demands of the metabolic syndrome carry the largest number of points, 34 222 points (40.7%). In the sphere of pharmacoeconomic analysis, cost-minimization analysis–CMA, as the simplest form of analysis could be applied in the case when comparing the two methods of determining the laboratory tests that have the same result or affect a huge difference in price. Test for example glucose has the highest cumulative cost of the biochemical analyzer; greater than spectrophotometry made on a lowest price has been done on the glucometer in family practice. Individual required glucose in the biochemical laboratory for spectrophotometry, which is two times lower price than the biochemical analyzer in the demand for multiple biochemical index is working on a biochemical analyzer which is more expensive laboratory diagnosis. Our retest has shown that the most rational GLUCOSE tests in family practice as a single test on the glucometer. Also a qualitative urine examination was done in family medicine has done much more efficiently and get the same outcome, but the MBL laboratory, and the result is much faster because it receives requests for laboratory diagnosis mainly to test for urine containing glucose and other tests that increase the time and cost of laboratory analysis findings.

By Family Practice guidelines for major disease metabolic syndrome and the possibilities that the blood glucose, urine and blood samples can be qualitatively examine the practice of family units, requiring only test: cholesterol and creatinine in medical-biochemical laboratories in that case was reduced to the required total of 1772 tests test on 331, it costs 3972 points, or14, 4% of 27 506 points. CMA uses the currency as a measure to analyze the price of the same tests and such analysis can be used to evaluate the use of test and self-control patients (e.g., glucose, urine) in a family practice in medical-biochemical laboratories. Thus it can be observed and to suggest criteria for evaluating performance using laboratory tests and technologies in the pilot units of family medicine, or laboratory tests that is economically justified to require the MBL in an analytical review. In this way we can suggest that test is economically feasible to do the second method, which can be rationalized.

Cost-effectiveness Analysis, CEA can be used as a retest cost of tests that have the same clinical outcomes such as laboratory tests are grouped according to the disease, condition or prevention. The outcomes of this analysis measure the non-monetary units (to confirm diagnosis and guidelines for further treatment, disease prevention). Results of laboratory tests in the previous analysis show the ***usefulness of the requested test results***. In the laboratory of the PHC Gracanica is a sample of 1000 patients underwent 5333 index, 69% test of normal and 31% pathological test results.

Laboratory tests: SE, cholesterol, triglycerides have clearly the number of pathological results–higher than the number of normal results. It can be proposed threshold of rationality of using these laboratory tests.

Thus, the ratio of points of laboratory tests of pathological and normal results may be viewed and propose a criterion for evaluating performance using laboratory tests in family medicine: the laboratory tests that is economically justifiable demand of MBL in an analytical review, and that laboratory tests can be rationalized.

To substantiate this it is necessary to regularly analyze the following variables in our study:
- Total number of demands grouped by major diseases; total number of testes grouped by major diseases;
- The results of biochemical-hematological index grouped according to the results in normal values;
- The results of biochemical-hematological index grouped according to the results in abnormal values;
- Economic value of the total number of completed test and leading diseases;
- Calculate the financial effect of test results are grouped in the normal range;
- Calculate the financial effect of test results, grouped into pathological values.

5. DISCUSSION

One of the principles that doctors should adopted in cases where the patient is compromised is the first choice of those tests that can detect treatable, leading or common disease. In doing so, we cannot allow the patient coming to the lab every five days, say after the heavy lunch, holidays, weddings to measure lipids, because it costs the health system. So he must adhere guide of good practices, to determine what the analysis that needs to be done in a particular case and how often. Popović-Pribilović D. was also investigated (in Montenegro) option: Rational laboratory diagnosis, and (not requiring) the application of unnecessary tests, which shows a constant need of rationalization and protocols need to test, and these are our findings.

The question is whether a system where everyone has the right at all can survive? Cost of technology becomes an

obstacle for small laboratories as well as those provided for in family medicine. Worldwide, there have been changes in the organization of laboratories to convert these units into the family medicine centers in the samples that are to be processed at larger laboratories. The aim of this new organization is the need for the availability of services as close as possible to the user and on other side to take advantage of sophisticated and expensive technology and knowledge that are financially inaccessible to small laboratories. For laboratory medicine to survive these major changes should take advantage of advances in information technology and the digital revolution.

Well-designed (re) organization of the laboratory, where family medicine and laboratory professionals are involved and act together, will increase the diagnostic value of MBL laboratories. With this concept, laboratory professionals, the successful management of human, financial and labor resources and will provide diagnostic expertise in health care patients. The role is that it so good with the cooperation of the patient, doctor of family medicine and management of medical-biochemical laboratories are still a fast, safe and high quality findings.

There are many legitimate reasons to connect the various disciplines. In this study, with recommendations by Gjuro Deželić records and communications: Laboratory Medicine, aims to create electronic health records that will improve the quality of our service users and reduce costs. Although doctors and laboratory specialists depart from patients often differ because of the lack of communication and mutual respect. We will need existing financial resources to use in a rational way in order to have enough for everyone, and for the introduction of new laboratory parameters necessary for correct diagnosis. Ana Stanić, Canić, Gabor and all other laboratory experts have thought that the profession has to tell. What is actually the waist and has a lot of indicators in this study, what is routine in laboratory medicine is a mystery to others. Until he has completed the entire health care system, it will be a problem. But should the doctors and patients to educate themselves, to know and recognize that laboratory medicine is unquestionable, it has great benefits and applications in family medicine, primary health care and prevention. But there are great price that will cost, and equipment and reagents, and more. That would be huge costs in this system is reduced to normal, it is necessary to:

• Provide preventive health care. When that is done: track and suggest preventive measures. If the insured does not done that, the insured to bear the costs of controls.

For the laboratory diagnosis is necessary to be:
- directed towards the discovering the of the disease risk in healthy populations,
- directed to controlling the risk factors:
a) in patients with established disease,
b) in patients with high risk.

This means to regularly do systematic reviews in health care for the population as an indispensable means of prevention and early detection of disorders in the primary function of individual body systems and organs. With the full attention of the same try to meet with the required additional laboratory tests that the analyst during the work

deems it necessary.

The results of this survey, which included 63.6% female patients and 36.4% of male patients show a different representation requires a biochemical-hematological diagnostic tests by physicians involved in the health care system of the PHC Gracanica. The largest percentage of patients that require comes from general practitioners (42.2%), followed by family medicine physicians (37.5%) and at the end of other specialists in primary health care (20.3%).

In 1000 requires is represented by a total of 5333 laboratory tests. Percentage of most common laboratory tests in the individual requirements of all the teams of doctors involved in the health care system was in order: glucose (14%), WBC (14%), urine (13.9%), SE (10.3%), total cholesterol (8.5%), triglycerides (8.4%), aminotransferase (ALT, AST 6.7%), creatinine (6.7%), urea (4.8%), Tbil. (0.9%), fibrinogen (0.9%), CRP (0.8%), AF (0.8%), HDL cholesterol (0.7%), serum calcium (0.6%), phosphorus in serum (0.5%), Acidum uricum (0.5%).

Of the total number of laboratory tests required 2348 requested general practitioners. General practitioners had requirements at the level of 44% of the total number of required tests. The doctors of family medicine were represented with 40.7% of tests, and other specialists have demanded 15.3% of total tests. When you look at the distribution of the required test for doctors, we can conclude that the requirements vary. Thus, the requirements for the SE and HP at the same level of representation at general practitioners and family medicine physicians. In doing so, the requirements related to sedimentation rate and urine findings significantly higher for specialists compared with other groups of doctors. It is interesting to note that the lipid profile in patients rarely require more specialist than other physicians. Specific laboratory tests such as CRP and fibrinogen are present in twice as large scale by a doctor of family medicine which is to be expected from other specialty physicians. NE, WBC, glucose, lipid profile and urine were the most frequently found in the requirements of general practitioners in 54-80% required. Individual representation of the test was: glucose–80%, urine–75%, HP–72%, SE–55%, lipids–54% and ALT, AST–36%.

Family Medicine doctors have demanded 2167 (40.7%) examinations. Representation of the most common test requests in a doctor of family medicine is: glucose–78%, urine–73%, HP–74%, SE–60%, lipids–50% and ALT, AST–43%.

Different representation of the normal results of laboratory tests and pathological results of laboratory tests done in the biochemical-hematological laboratory of the PHC Gracanica. In our study, a total of 1000 requests for testing, 69% consisted of tests with normal results and 31% test yielded abnormal results. It is interesting to note that the majority of the required tests, such as HDL-cholesterol, uric acid over 70% of test results have the character of the normal value which is not the case for fibrinogen, where the distribution is such that it detects a high prevalence of pathologic (71%) results. These results suggest a need for rationalization of diagnostic tests. When these results are from the aspects of the type of doctors who demanded this kind of analysis can be concluded that the doctors at the

level of laboratory tests found no significant differences in% for normal and pathological results.

Analytical review laboratory tests have examined its economic value expressed in points and the point value is defined by (0.80 KM). The economic value of the index is expressed through the number of points of general practitioners was 37 190 (44.1%) points. The economic value of tests that are required by family medicine doctors is 33 681 (40%) points. The economic value of tests that are required by specialists: pediatricians, gynecologists and specialists in occupational medicine was 13 441 (15.9%) points. A similar % representation of test and % evaluation of the test for general practitioners and family medicine was 44% of the share index of GPs, 40.7% share index doctor of family medicine and 15.3% specialists.

Economic analysis of the number of required laboratory tests for diseases points to a different number of points at the required tests and diseases. The highest costs are related to the disease of diabetes (E00-E90) or 25.2% points, followed by costs for respiratory diseases (J00-J99) or 20.2% and then the costs of urinary tract diseases (N00-N99) or with 18.4% and hypertension with 15.4% of total points.

Correlation between total score and the total number of requests by the most frequent diseases provides economic value by one order per request of diseases: diabetes, respiratory, urinary diseases and hypertension: from 85.8, 86.8, 84.5 and 78.2 points. Mean point value of requires of the above diseases is leading to an average 83.7 points. Medium requires of the leading diseases, metabolic syndrome was 86 points. Frequency representation of laboratory tests for diseases, and frequency distribution of points value of laboratory tests are any indication, more comprehensive recommendations for action in the economic analysis of laboratory tests examined in the outpatient clinic and possible rationalization.

If we take as a criterion that 27.1% of the population is affected, then the criteria of cost and cost spent on points found pathological results across all types of physicians to include these tests in screening, we can conclude that all patients in the study population was effectively had immediately urinalysis, cholesterol, triglycerides, SE, fibrinogen, because the large presence of even more pathological results than the normal. All other analysis on the basis of such indicators was economically unjustifiable to be done as screening such as glucose, WBC, creatinine, urea, AST, ALT, and Ca. Here it is necessary to establish criteria for rational request supplemental index with clear guidelines.

By percentage most common laboratory tests in the leading disease, or metabolic syndrome, the demands of doctors in family practice were as follows: Chol., TGL., glucose, ALT, AST, SE, urine creatinine and urea. General practitioners are demanding the highest cholesterol and triglycerides, a family medicine doctors are demanding lower cholesterol and triglycerides and higher Ca, P, fibrinogen, ALT, AST, urea and glucose levels as the economic cost of these tools has its justification. In this population in family practice, the ratio of pathological and normal test results is greater than 1 indicates which type of test has to be done in screening in this population. In the same include: cholesterol, triglycerides, glucose, SE and urine. On

the other side will be to examine and analyze protocols for this disease when you change the requirements for other laboratory tests.

So, what to say at the end? In today's system of organization of Health in the Federation, there are few studies that take into account the need for reform and rationalization of health care, and that there have not compromised the health care system and perform quality work in health. To success should move us the quality, enthusiasm , cost / benefit, i.e., the rationalization that is used in the model of health care for the treatment, diagnosis, where among other things today emphasizes the effect.

6. CONCLUSION

In our study, it is widely available laboratory diagnosis. In 1000 demands for laboratory diagnostics by referral diagnosis required were a total of 5333 tests. Percentage of the most common test for the leading diseases in family practice at the outpatient clinic showed a large use of laboratory diagnosis in family practice, and the important role of laboratory medicine now and in future in family medicine. Scientific basis for the modification of risk factors, the analysis of the WHO collaborative group, but the results of our study were also used indicator of laboratory medicine in the future.

The ratio of points for laboratory tests of normal and pathological results can be observed and proposed as a criterion for assessing the performance using laboratory tests and technologies in the pilot units of family medicine. This would achieve one of the most important objectives to be reduced to better and better organization and communication of family medicine and laboratory diagnosis, especially when it comes to some of the more frequent the mass of non-communicable diseases, which dominate the population and that are unnecessarily duplicated laboratory services in their treatment.

Present trends in the consumption of laboratory reagents in the PHC Gracanica in the last three years indicate that the cumulative effect of very high and increasing, suggesting an evident need for the rationalization of laboratory diagnosis.

This study shows that laboratory diagnosis is not used rationally, especially in major diseases and that there is need to harmonize requirements and protocols of laboratory tests for the disease. Therefore not used efficiently, and therefore there is the question of the economic feasibility of using all the above listed, almost routinely used tests.

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