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Results of Laboratory Tests not Accessed in Brazilian Private Laboratories

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SUMMARY

Background: Laboratory medicine is an important part of the healthcare system and directly contributes to preventive actions, diagnostics, treatment, and management of diseases. The level and quality of the utilization of laboratory resources have been frequently questioned. A dissemination of conflicting data regarding the quantity of laboratory tests not accessed by the requesting doctors or by the patients themselves is observed, although very often the sources and methodologies used to raise those numbers are not properly clarified. The objective of this study was to obtain data about access to results of tests taken in Brazilian private clinical analysis laboratories which use the laboratory information system developed by SHIFT Consultoria e Sistemas.

Methods: Information was extracted from 81 laboratories, which were responsible for the performance of 93,240,651 tests, collected from 7,067,087 patients.

Results: The total number of tests not accessed, considering all the regions, was 5,071,454, corresponding to a proportion of 5.4%. In the face of the potential risks of adverse events or impacts in the management of diagnostics and treatments, including economic impacts due to prolonged hospitalization time, the proportion of 17.9% which was found corresponding to tests “not accessed” showing “abnormal” results, is worrisome, mainly if we observe that of those, 2.5% were related to “abnormal” test results processed by laboratories which work in hospital care.

Conclusions: SBPC/ML, in face of the relevance of the theme, will keep stimulating the monitoring and utilization of adequate laboratory resources, in order to allow sustainable healthcare systems.


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KEY WORDS
hospital laboratory, clinical laboratory services, patient safety, diagnostic error, laboratory information systems

INTRODUCTION

Laboratory medicine is an important part of the healthcare system and directly contributes to preventive actions, diagnostics, treatment and management of diseases [1]. Even though over the last decades the advancements in the knowledge and precision of the equipment used in diagnostic exams have been remarkable, the level and quality of the utilization of those resources have been
frequently questioned. The attainment of diagnostics is based on the history related by the patients, the physical examination, and the clinical observation grasped by the doctors. Complementarily, doctors may resort to exams, in the search for more information, through the services provided by clinical pathologists, anatomical pathologists, geneticists, radiologists, among other specialties. Complementary tests are also useful to guide the next assisting steps, dismiss inappropriate interventions, provide information for effective care to the patients, and ensure the value brought up by the utilization of such resources [2].

The Brazilian laboratory medicine sector has been repeatedly questioned - by authorities, opinion makers, and healthcare sector professionals - about the level of access to test results. A dissemination of conflicting data regarding the quantity of laboratory tests not accessed by the requesting doctors or by the patients themselves is observed, although very often the sources and methodologies used to raise those numbers are not properly clarified. This is used, among other things, to justify the increasing rise in costs in the healthcare area and the waste level in the sector.

In Brazil, as in other countries, the laboratory and radiological exams performed at an outpatient level are historically provided directly to the patients and, in some cases, to the requesting doctors. Some medical laboratories communicate with doctors to discuss test results, which is considered good practice, but there are no norms or guarantees that this occurs on a regular basis. Likewise, after the test results are delivered to the patients, there is no assurance about the lead time during which the results are evaluated by the requesting doctors.

According to Graber [3], without exactly knowing the size of the problem posed by the lack of test result follow-ups, many clinicians may underestimate its extent, and therefore, fail to take any action to improve the process.

In this sense, the objective of this work was to obtain data about access to results of tests taken in Brazilian private clinical analysis laboratories which use the laboratory information system developed by SHIFT Consultoria e Sistemas.

**MATERIALS AND METHODS**

This survey was prepared through a partnership between the Brazilian Society of Clinical Pathology/Laboratory Medicine (SBPC/ML) and SHIFT Consultoria e Sistemas.

SBPC/ML is a Medical Specialty Society, founded in 1944, acting in the area of clinical laboratories. Its headquarters are located in the city of Rio de Janeiro and its goal is to gather doctors holding a Clinical Pathology/Laboratory Medicine specialist title and other specialties’ professionals acting in clinical laboratories, such as biochemical pharmacists, biomedical doctors, biologists, and other companies in the sector. SBPC/ML carries out professional enabling and qualification projects and materializes them through activities related to study, research, and scientific dissemination in Laboratory Medicine, with the main objective of preserving the population’s health.

SHIFT is a laboratory information systems (SIL) development company, founded 25 years ago, currently with 134 user laboratories, located throughout Brazil. Annually, those laboratories provide services for around 35 million patients at their collection units and perform 200 million tests (as per 2015 data), representing approximately 16% of the Brazilian laboratory test processing market, estimated in 1.25 billion tests per year.

Prior to the survey, letters were sent to the technical directors of laboratories using SIL, developed by SHIFT, with information about the survey to be conducted and its respective goals, with the objective of getting the laboratories’ adhesion through an authorization, ensuring the confidentiality of each laboratory’s individual information.

Between May 1st, 2016 and May 1st, 2017, data related to the production of tests processed in the previous 365 days for each laboratory, which had formally agreed to participate in the survey, were evaluated separately, through the execution of a computational algorithm developed by SHIFT’s technical team.

Thereby, the access to the previous year’s operational data of each participating clinical laboratory was planned. The final date, which comprised the survey period, corresponded to the 60 days previous to the date of execution of the computational algorithm. Such definition was due to the possibility of including tests requiring processing with a more extensive lead time and for which results would be available in up to 60 days after their execution. Among the data collected were the following:

i) geographic region in which the clinical laboratories are active, being the North and Northeast regions jointly calculated, since they represent a smaller number of laboratories

ii) type of insertion in the Brazilian healthcare system (public and supplementary)

iii) type of environment in which the patients whose tests were collected belonged (outpatient and hospital)

iv) cytopathologic and histopathologic tests offered

v) total quantity of patients assisted and number of tests processed in the period comprised by the survey

vi) total number of test results not accessed

vii) number of test results not accessed in the outpatient and hospital environments, by geographic regions studied

viii) number of “abnormal” test results among the results not accessed

ix) total number of “abnormal” test results among results not accessed, in outpatient and hospital environments, by geographic region studied
The survey considered as “accessed test results”: i) results which were printed, registered or not in the information system - since the current practice in laboratories is to print on request, and ii) results that were consulted by the patient or the requesting doctor through electronic means.

The test results printed, but without the respective delivery registration in the system, although considered as accessed, were also calculated separately.

The electronic means considered for results access were: i) the internet (laboratory site); ii) mobile devices and cell phone applications and iii) delivery through electronic mail from SIL.

The survey considered as “test results not accessed”: i) the test results that were processed and released without the delivery registration in the SHIFT information system or which were not printed; ii) results without evidence of consultation through the above mentioned electronic means; iii) the test results of hospitalized patients without delivery registration in SHIFT’s SIL or which were not printed - there was no differentiation between hospital laboratories which had SIL’s integration with their information systems or not.

All the tests processed were individually calculated, since each patient may have been subject to more than one test, and the results of only some of those tests may have not been accessed.

The survey did not consider the following: i) tests that were not available to the patient on the date of the algorithm run. That means that out of the total, the cases of tests that had not yet been released were excluded (for being in progress, including cases of analysis repetition for confirmation of results); ii) tests for which material had not yet been delivered to the laboratory, regardless of the reason; iii) results of tests delivered by the laboratories directly to other institutions with which they have an agreement (clinics, hospitals etc.), since the delivery control to the end user patient is not managed or monitored by the laboratory, which prevents registration in SHIFT’s SIL; iv) results of tests performed for patients that were assisted by the Public Healthcare System (SUS), due to the way by which the results are delivered and distributed to this system’s patients (mostly, the distribution to the patients is done manually by the Healthcare Basic Units and/or hospitals, which prevents control by SHIFT’s SIL).

The survey considered as “abnormal test results” those which were outside the boundaries configured as “reference ranges” by each participating laboratory.

For tests comprised of multiple parameters/analytes (such as, for example, urinalysis, lipid profile etc.), the survey classified as out-of-bounds of the “reference ranges” those which had at least 1 (one) of its parameters outside the determined reference range.

The survey considered as “non-classified” those results which could not be compared with the “reference range” boundaries, in view of the lack of parameterization in the laboratory information system or the formatting of those ranges in tables where there are no prede-termined individual fields for inclusion of values of each analyte, which prevented the comparison via the computational algorithm developed.

The data analysis did not consider the various sizes of the participating laboratories.

The graphic and statistical analyses were made through the Excel software’s for Windows and R 3.3.3 (R CORE TEAM, 2017) [4].

**Statistical evaluation**

The statistical approach used non-parametric tests and computational methods, applied to the proportion of tests “not accessed” against the total of tests processed, the proportion of abnormal tests, the care environments, and respective geographic regions. Such proportions were analyzed via the bootstrap technique [5]. The proportions of abnormal tests among tests not accessed, according to the type of patient care (outpatient or hospital), were also analyzed. In this case, two distinct analyses were applied: the first one investigated the association between the type of care and geographic region, to identify increased or decreased tendencies in the proportions; the second one investigated possible differences between the percentages obtained by type of care. To investigate the association between the geographic region and the type of care, and thus explore tendency between those proportions, a chi-square test of independence was used. To test the difference between the proportions according to the type of care, the Mann-Whitney U test was used. The significance level associated in this survey was p < 0.05 and the confidence interval was 95%.

**RESULTS**

Information was extracted from 81 laboratories, which represented 69% of the clients using SHIFT’s SIL and had agreed to participate in this survey.

The participating laboratories were responsible for the performance of 93,240,651 tests, collected from 7,067,087 patients. The average number of tests performed per patient was of 13.1. Out of the tests, 43,185,695 (46.3%) were performed by laboratories located in the Southeast region; 33,895,565 (36.3%) in the Center-West region; 11,793,635 (12.7 %) in the North-Northeast region, and 4,365,756 (4.7%) in the South region, as shown in Figure 1 below.

Out of the total number of participating laboratories, 49 (60%) assisted the beneficiary clients exclusively through the private supplementary healthcare system, while 32 (40%) laboratories assisted them both through public and private supplementary healthcare systems. Out of the 81 laboratories which had accepted to participate in the survey, 64 (79%) processed cytopathologic and histopathologic tests or outsourced them to other laboratories.

The majority of tests processed by the participating laboratories occurred for patients assisted in an outpatient...
Table 1. Absolute numbers and respective proportions of tests, processed by 81 laboratories, in the period between May 1st, 2016 and May 1st, 2017, by type of environment and geographic region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Outpatient</th>
<th>%</th>
<th>Hospital</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>39,860,672</td>
<td>92.3</td>
<td>3,325,023</td>
<td>7.7</td>
</tr>
<tr>
<td>South</td>
<td>4,254,670</td>
<td>97.5</td>
<td>111,086</td>
<td>2.5</td>
</tr>
<tr>
<td>Center-West</td>
<td>32,993,291</td>
<td>97.3</td>
<td>902,274</td>
<td>2.7</td>
</tr>
<tr>
<td>North-Northeast</td>
<td>10,586,856</td>
<td>89.8</td>
<td>1,206,779</td>
<td>10.2</td>
</tr>
<tr>
<td>All regions</td>
<td>87,695,489</td>
<td>94.1</td>
<td>5,545,162</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Table 2. Absolute numbers and respective proportions of laboratory test results “not accessed”, processed by 81 laboratories, in the period between May 1st, 2016 and May 1st, 2017, by Brazilian geographic region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Total of tests processed</th>
<th>%</th>
<th>Total of tests not accessed</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>43,185,695</td>
<td>46.3</td>
<td>2,607,502</td>
<td>6.0</td>
</tr>
<tr>
<td>South</td>
<td>4,365,756</td>
<td>4.7</td>
<td>266,752</td>
<td>6.1</td>
</tr>
<tr>
<td>Center-West</td>
<td>33,895,565</td>
<td>36.3</td>
<td>1,137,697</td>
<td>3.4</td>
</tr>
<tr>
<td>North-Northeast</td>
<td>11,793,635</td>
<td>12.7</td>
<td>1,059,503</td>
<td>9.0</td>
</tr>
<tr>
<td>All regions</td>
<td>93,240,651</td>
<td>100</td>
<td>5,071,454</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Bootstrap interval of 4.08% to 8.25%, considering p < 0.05.

Table 3. Absolute numbers of test results not accessed, processed by 81 laboratories in the period between May 1st, 2016 and May 1st, 2017, which showed “abnormal” values, and their respective proportions, by Brazilian geographic region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Quantity of tests not accessed</th>
<th>Quantity of tests not accessed, with “abnormal” results</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>2,607,502</td>
<td>418,627</td>
<td>16.0</td>
</tr>
<tr>
<td>South</td>
<td>266,752</td>
<td>44,364</td>
<td>16.6</td>
</tr>
<tr>
<td>Center-West</td>
<td>1,137,697</td>
<td>233,999</td>
<td>20.0</td>
</tr>
<tr>
<td>North-Northeast</td>
<td>1,059,503</td>
<td>214,655</td>
<td>20.2</td>
</tr>
<tr>
<td>All regions</td>
<td>5,071,454</td>
<td>911,641</td>
<td>17.9</td>
</tr>
</tbody>
</table>

Bootstrap interval of 16.3% to 20.1%, considering p < 0.05.

environment (87,695,489 or 94.1%), and the remaining tests were processed for hospitalized patients (5,545,162 or 5.9%).

Table 1 shows the absolute numbers and respective proportions of tests processed by the laboratories which had accepted to participate in the study, by type of environment and geographic region. The total number of tests not accessed, considering all the regions, was 5,071,454, corresponding to a proportion of 5.4%. The highest proportion of tests not accessed was detected in the North-Northeast region, followed by the South, Southeast, and Center-West regions, as shown in Table 2. Out of the total tests not accessed (5,071,454), the proportion of “abnormal” results, considering all the calculated regions, was of 17.9%, corresponding to 911,641 tests. The number of laboratory tests not accessed with “abnormal” results by Brazilian geographic region, according to the criteria already described, and their respective proportions, are shown in Table 3. The confidence intervals obtained for the pertinent proportions (test results not accessed against the total, and
Table 4. Absolute numbers of test results not accessed, by 81 laboratories, in the period between May 1st, 2016 and May 1st, 2017, which showed “abnormal” values, and their respective proportions, by type of environment and Brazilian geographic region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Total of tests processed</th>
<th>Total of tests processed outpatient</th>
<th>Total of tests not accessed abnormal outpatient</th>
<th>%</th>
<th>Total of tests processed hospital</th>
<th>Total of tests not accessed abnormal hospital</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>43,185,695</td>
<td>39,860,672</td>
<td>345,152</td>
<td>0.9</td>
<td>3,325,023</td>
<td>73,563</td>
<td>2.2</td>
</tr>
<tr>
<td>South</td>
<td>4,365,756</td>
<td>4,254,670</td>
<td>43,897</td>
<td>1.0</td>
<td>111,086</td>
<td>467</td>
<td>0.4</td>
</tr>
<tr>
<td>Center-West</td>
<td>33,895,565</td>
<td>32,993,291</td>
<td>214,168</td>
<td>0.6</td>
<td>902,274</td>
<td>19,827</td>
<td>2.1</td>
</tr>
<tr>
<td>North-Northeast</td>
<td>11,793,635</td>
<td>10,586,856</td>
<td>167,051</td>
<td>1.6</td>
<td>1,206,779</td>
<td>47,604</td>
<td>3.9</td>
</tr>
<tr>
<td>All regions</td>
<td>93,240,651</td>
<td>87,695,489</td>
<td>770,268</td>
<td>0.9</td>
<td>5,545,162</td>
<td>141,461</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Bootstrap interval of 0.85% to 3.45%, considering p < 0.05.

Table 5. Proportions of tests not accessed by Brazilian geographic region and healthcare institutions which had used the internet in the previous 12 months, making laboratory tests available.

<table>
<thead>
<tr>
<th>Region</th>
<th>% Tests not accessed</th>
<th>% Availability of test results - Cetic data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>6.0</td>
<td>43</td>
</tr>
<tr>
<td>South</td>
<td>6.1</td>
<td>58</td>
</tr>
<tr>
<td>Center-West</td>
<td>3.4</td>
<td>43</td>
</tr>
<tr>
<td>North-Northeast</td>
<td>9.0</td>
<td>-</td>
</tr>
<tr>
<td>North</td>
<td>-</td>
<td>35</td>
</tr>
<tr>
<td>Northeast</td>
<td>-</td>
<td>37</td>
</tr>
</tbody>
</table>

Figure 1. Distribution of tests processed by geographic region.
tests with “abnormal” results among the non-accessed ones) indicated peaks in some regions. Such proportions, however, did not reveal an association between the type of care (outpatient or hospital) and the laboratory geographic region. The results not accessed, considered as “non-classified” according to criteria already described, corresponded to 2,184,604 (43.1%). As may be verified in Table 4, the total proportion of tests with “abnormal” results not accessed, found in the outpatient environment, considering all the calculated regions, was 0.9%, and the regional proportions found in this environment ranged from 0.6 to 1.6%. Now, the total proportion of results not accessed as “abnormal” results, verified in the hospital environment, considering all the calculated regions, was 2.5%, being that the regional proportions ranged from 0.4 to 3.9%. The highest total proportion of results not accessed with “abnormal” outputs found did not reveal an association between the environment where they were processed, the laboratory care and the laboratory geographic region. Likewise, the proportions of test results not accessed with “abnormal” outputs found did not reveal an association between the environment where they were processed, the laboratory care and the laboratory geographic region.

The number of tests for which results were only “printed”, without the corresponding registration in the laboratory information system, was 9,960,531 (10.7%).

**DISCUSSION**

Healthcare expenses represent one of the main economic drivers in most countries. Recent studies reveal that the actual expenses with laboratory tests represent 1.4%, 1.6%, and 2.3% of the total healthcare expenses in Germany, Italy, and the United States, respectively. On the other hand, the expenses verified in the United States and in European Union countries have not been producing the expected benefits in healthcare assistance. Therefore, it is expected that future interventions in the laboratory sector will be driven to the level of resources utilization, the search for efficiency, and the elimination of waste [6-8].

The World Alliance for Patient Safety has identified the failures in test results follow-up (cause 4) as one of the major processes contributing to unsafe patient care [9]. According to Rodrigues-Borja and collaborators [10], the delay in reviewing test results by doctors influences the quality of the healthcare assistance. There is already consistent evidence showing that the test management process represents a significant source of error and harm to the patients [11-13].

According to Poon and collaborators [14], delays in reviewing test results are frequently observed, and approximately 20% of those failures result in harm to the patients. Sung and collaborators (2006) [15] reported that from 1 to 10% of the abnormal test results not accessed by the requesting doctors represented potential adverse consequences to the patients’ health.

In Australia (2011), the consequences of delay or lack of test results follow-up were described in a Clinical Excellence Commission report in New South Wales, Australia - which reported 11% of incidents progressing to casualties and 32% of incidents with important consequences to patients, including loss of bodily functions [16].

The data generated by SBPC/ML and Controllab Laboratory Indicators Program, with the objective of monitoring laboratory quality indicators, among other things, revealed that in the first half of 2017, 22 participating laboratories located in different Brazilian regions, generated 8,838,590 reports, with a variable number of test results, from which 602,187 (6.8%) were considered as “not accessed”. The ones considered as accessed were the printed reports, the telephone communications, SMS and WhatsApp messages, and the ones consulted through smartphone applications and internet portals. The median of reports “not accessed” by the participants, however, was of mere 1.7%.

The present work has evaluated the sample of tests processed by 81 Brazilian clinical laboratories of various sizes, using SIL, developed by SHIFT Consultoria e Sistemas. Considering that the total number of laboratory tests in Brazil is around 1.25 billion/year, the sample reflected herein was satisfactory, representing approximately 7.8% of this total. The laboratories which work exclusively with SUS did not participate in the survey. The proportion of laboratory test results not accessed (5.4%) found in this work proved to be lower to what is broadcast by the Brazilian media, although the quotes referred to quotes considered a number of reports which, in reality, have a variable number of tests. This proportion is also lower than the variation range of failures in monitoring laboratory tests, described in the systematic review made by Callen and collaborators [17]. The authors considered as failures the absence of registered actions related to the visualization of results in manual and electronic medical records, and calculated, in retrospective studies, 6.8% to 62% test results not accessed, processed in an outpatient environment.

In the face of the potential risks of adverse events or impacts in the management of diagnostics and treatments, including economic impacts due to prolonged hospitalization time, the proportion of 17.9% which was found, corresponding to tests “not accessed” showing “abnormal” results, is worrisome, mainly if we observe that, of those, 2.5% were related to “abnormal” test results processed by laboratories which work in hospital care. Callen and collaborators [18] reported the proportion of 20.04 to 61.9% of tests not accessed processed in hospitalized patients. The usual mean of delivery and the impossibility to
control the access to the test results processed for patients in the public healthcare system did not allow comparisons between data of test results in that system and data of patients that use the supplementary system. Considering that some clinical laboratories which had accepted to participate in this work were integrated with hospital information systems, it is possible that part of the tests considered as “not accessed” for lack of access registration in the SHIFT information system have in fact been accessed through the hospital information system. In this case, the proportion of test results not accessed, processed for hospitalized patients, may be lower than the one calculated.

Since a high proportion of the test results not accessed (2,184,604 or 43.1%) could not be classified in relation to the reference ranges - due to the inability to capture the information or indetermination of those values in the respective information systems, it is possible that the number of tests not accessed with “abnormal” results may be even higher than the percentage found. A significant number of laboratories (64 out of the 81 or 79%) informed that they process histopathologic and cytopathologic tests or outsource them to other laboratories. However, this survey did not calculate the specific proportion of those tests among the non-accessed tests. By their nature, when there are positive reports, there is a potential for delays in diagnostics, also with potential impacts on the patients.

Data obtained in Brazil in 2016 by the Regional Center for Studies on Information Society Development (Cetic.br) through “pesquisa TIC Saúde” (“TIC Health survey”), about infrastructure, availability of information and communication technologies, and applications based on them in healthcare institutions, revealed, among other things, the proportions of internet utilization and the availability of laboratory test results in the previous 12 months. The mentioned proportions and the comparison with the proportion of test results not accessed calculated in this work are shown in Table 5 [19].

Although the availability of test results through the internet may not be ignored as an important factor, as well as a facilitator in terms of access to the results, we have not observed a direct relationship between those data and the ones calculated in this work.

In the healthcare systems of various countries, such as the United Stated and the United Kingdom, it is common that the test results return directly to the requesting doctors, although there are reports about initiatives to make them available directly to the patients, in case the doctors are unable to access them [20].

In Brazil, for over a decade, the availability of test results directly to the patients has been a frequent practice, be it by means of printing the results at the laboratory service unit or direct access by doctors and patients to the clinical laboratories’ websites via internet. Some clinical laboratories provide test results through electronic mail or messages (SMS) in smartphones to both the requesting doctors and patients. In this last case, there is no guarantee about the lead time within which the results will be evaluated by the requesting doctor. According to Callen and collaborators [17], the loss or lack of access to test results in the outpatient scenario may be attributed to various factors, among them: the lack of governance principles related to the management of test results, the lack of integrated information systems, the tests’ multidisciplinary nature, the management processes, and the need to consider the role of the patients in following up their own tests.

According to Ferraro and collaborators (2016) [21], initiatives by the laboratories’ professionals to improve physicians’ acknowledgment of laboratory data and their interpretation are needed, in order to ensure quality and safety in the extra-analytical phases of the total testing process.

Nevertheless, according to Singh and collaborators (2007) [22], the follow-up and communication of test results, including the critical ones, do not reach 100%, even in those organizations with sophisticated and mature electronic health records.

Among the possible technology information contributions to solve access problems to laboratory test results are warnings about pending test results and released results, in addition to tracking systems on clinical actions and decisions, based on the test results received [12,16]. Despite the fact that the data obtained in this work were extracted through a different methodology from the one used in other studies, the results confirm the need to awaken an awareness about those potential risks, both within the medical environment and the patients themselves, warning about possible adverse events and the costs they represent to the healthcare systems.

Those data also reveal the existence of opportunities for the clinical laboratories to contribute, in the direction of developing solutions for test results follow-up, thus playing a role in the reduction of incidents and attainment of best outcomes in healthcare.

Other studies, with the participation of laboratories which use other laboratory information systems and which evaluate the impacts of test results “not accessed” in different healthcare systems, are necessary, in order to work as a subsidy for managers and healthcare policy makers, in addition to clarifying the Brazilian society about the efficiency in the use of laboratory services.

Survey limitations

Among the “abnormal, not accessed” test results, the proportion corresponding to “critical values” were not calculated, since those values are defined by each laboratory and may vary. Likewise, the proportions of cytopathologic and histopathologic test results “not accessed” were not calculated, neither the influence of tests “not accessed” in the outcome of the services.
CONCLUSION

The proportion of laboratory test results not accessed in a data survey with 81 laboratories located in different Brazilian regions was of 5.4%, refuting the data broadcast by the Brazilian media and governmental agencies. SBPC/ML, in face of the relevance of the theme, will keep stimulating the monitoring and utilization of adequate laboratory resources, in order to allow sustainable healthcare systems.

Declaration of Interest:
The authors declare no conflict of interest.

References: