Performance Audit of Ambulance Medical Service System in Georgia

Existing Problems in Timely Response and Effective Service

Performance Audit Report

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Due to the unsatisfactory condition of the primary healthcare in the country, ambulance medical service is a vital instrument for healthcare. In the countries with leading economies, ambulance medical care is used as a tool for survival in emergency cases. However, in Georgia its function is more significant, due to being a substitute for primary healthcare.

It is important for us that ambulance medical care serve its main historical function, and that the service is of high quality and timely. This can be achieved by implementing priority dispatching system, decreasing number of non-emergency calls, proper identification of needs and implementing quality management and control system.

The present Performance Audit report discusses the problems that ambulance medical service is facing, their causes and issues corresponding recommendations.

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report number № 4/00

24.02.2014

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24.02.2014
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CONTENT

Terms & Definitions

PDS	Priority Dispatch System
WHO	World Health Organization
EENA	European Emergency Numbering Association
NHS	National Health Service of UK
OSHA	Occupational Safety and Health Administration
BLS	Basic Life Support
ACLS	Advanced Cardiovascular Life Support
ALS	Advance Life Support
PHTLS	Prehospital Trauma Life Support
RT	Response Time
RT	Hospital Resource Availability
PLS	Peak Load Staffing

Executive Summary

Over years ambulance medical service has been free for the population of the country. Recently substantial changes were made to the system.

Legal entity of public law (LEPL) 112® was established under the Ministry of Internal Affairs of Georgia in 2012, which is the Centre for the Emergency & Disaster Management, operating 24/7 with a nation-wide coverage. It accepts calls from the entire country, via a common European number 1-1-2.

Tbilisi Municipality implements the ambulance medical service in the capital city of the country. In 2013 vehicle fleet and medical equipment of the service was substantially upgraded, while the quality – improved.

Ministry of Labor, Health and Social Assistance (MOLHSA) delivers the ambulance medical service in the regions of the country. MOLHSA transferred its vehicle fleet to the insurance companies operating in the regions, which started to co-finance the service delivery there.

State Audit Office analyzed the planning of ambulance medical service, definition of its priorities, availability of funding, management, resource use and performance.

Audit has identified that substantial problems remain in the ambulance medical service despite the referred positive changes.

Efficiency and effectiveness of the service is highly influenced by the increased number of ambulance calls, which are caused by the charge-free nature of the service. Other reasons of the high workload is the poor condition of primary healthcare in the country, irregular use of educational and information schemes, lack of consultancy services, etc.

Ambulance medical service is not delivered along the system of healthcare priorities.

PDS is a dispatch designed to define the priorities and categorize the emergency medical cases. PDS differentiates the individual types of medium and low complexity medical incidence cases and timeframe for the follow-up actions. Priorities are defined on standardized protocols, instructions, which incorporate different nosologies.

PDS is not yet introduced in Georgia, though 112 LEPL applies some sort of mechanisms for the definition of priorities. Audit has identified that 112 LEPL categorizes cases by different medical priorities on the ground of individual nosologies, though there are no uniform dispatch protocols developed and accredited jointly by the Ministry of Labor, Health and Social Affairs and other implementing agencies of the program.

In addition, no follow-up time frame is defined for different complexities of incidence types and condition of patients. Audit has identified that notwithstanding the gravity of patient condition, average indicator of time is about the same everywhere.

Increased number of calls and lack of priority setting system increases the risk of delays in the delivery of ambulance medical services.

Regions of Georgia are not equipped with optimal territorial setting of medical brigades. Workload of each team differs by regions. They are divided by the population and geographic principle. No historic data of calls by regions is taken into account while planning the program of ambulance medical service. Different workload of medical personnel is caused by the presence of several insurance companies in the same region: if different companies operate health clinics in the neighboring self-governing territory the ambulance medical service provider is responsible for the follow-up on the phone calls made within its municipality.

Distribution of the ambulance medical services by regional administrations to a certain extent restricts the response scope

with a principle of the optimal distance.

In the period of audit, due to the poor condition and depreciation of the medical service vehicle pool in regions, it often happens that teams are either late or do not follow-up on the calls. As there is no alternative connection with regions, LEPL 112 finds it difficult to pass on the referrals or to monitor the service delivery. In response to the late or no arrivals, MOLHSA has no flexible regulation mechanisms.

It is worth noting that by the Strategy published in late 2013, ambulance medical service in regions will not be implemented by the involvement of insurance companies. With this aim an LEPL Ambulance Medical Assistance Centre was incorporated under the MOLHSA. The latter plans to upgrade the vehicle pool in the regions and make other adjustments to the system.

Substantial problem is the lack of medical service management and under-qualification of medical personnel engaged in the emergency rescue. Audit has identified that due to the lack of a single accreditation program medical doctors are trained by different modules and curriculum in Tbilisi and regions of the country. At the same time, improvement of their qualifications is irregular and substantially lags behind the best international practice.

In the course of audit and within the context of hospital admission of patients, it is still a problem to cope with high rejection rate of patients at health clinics, lack of a single scheme of hospitalization and electronic reference. Alas, all these would enable the ambulance medical service providers to access the data on the available beds at clinics when and if the patients need to be hospitalized.

Audit has identified that reduction of public funds is not taken into account when individual and corporate (non-state) health insurance subscribers are treated by the private insurance companies.

In some cases, when material-technical base is purchased the program implementing agencies do not consider the economic and productive use of available resources, thus leading to inefficient expenses.

The present report scrutinizes the ambulance medical service in Georgia. Recommendations are drawn from the analysis and findings. We believe it justified to consider them for the improvement of the current situation.

1. Introduction

1.1 Background Information

Management of the Program Component of the Ambulance Medical Service in Georgia

Ambulance medical service is managed in the following manner: Program is implemented in the capital city by the Municipality of Tbilisi, while Ambulance Medical Assistance Centre Ltd delivers the service to the rest of the country's population. The latter has been incorporated by the Municipality of Tbilisi. Conflict of interest is witnessed, though in 2012-2013 this Centre was the only bidder in the tenders announced by the Municipality. Tbilisi administration thus made the procurement of their ambulance medical service. It is worth noting that in late 2013 this private company was transformed into a legal entity of public law (i.e. LTD turned into an LEPL).

Centre has a network of 13 branches, which are located in different districts of the city. Every single day 92 teams work in the delivery of ambulance medical service 24/7 (as of October 2013).

Social Service Agency LEPL subordinated to the Ministry of Labor, Health and Social Affairs delivers the emergency rescue service in the regions of the country. Their performance is coordinated by the Department for Coordination and Regime of Emergency Situations. Prior to 2014 this program was implemented by the MOLHSA, while it was co-financed also by the insurance companies implementing the national insurance agenda.

LEPL 112 subordinated to the Ministry of Internal Affairs accepts phone calls for the delivery of ambulance medical services.

Considering the aforesaid, program implementation mechanisms are functionally divided among various public institutions.

Funding of the Ambulance Medical Service

Total budget allocations for the ambulance medical service in 2011 amounted 28 043 358 GEL, while in 2012 – 33 058 903 GEL.

Ambulance medical service delivered by the Municipality of Tbilisi in the capital city is funded from the budget by the principle of unit price of individual cases, which amounted to 40 GEL in the period of audit. Under the tender agreement concluded by Ambulance Medical Assistance Centre Ltd with the Municipality of Tbilisi, reports were submitted by electronic mail to the commissioning organization (city administration) at the end of every month in 2012 with information on the past performance (number of phone calls and follow-up visits, with an indication of personal data of served patients). On the grounds of this information funds were transferred to the bank account of the Centre, calculated at the rate of 40 GEL per patient. As for the insured patients, from 2012 services rendered to insured patients were indicated separately in the reports, along with the identity of such insurance companies. In such cases compensations were requested from the respective insurance companies. In 2012 work delivered by insurance companies amounted to 1,420,000 GEL. No agreements were concluded with insurance companies in 2013. Hence, this program is financed solely from the State Budget.

Ambulance medical service in regions is funded from the State Programs of Emergency Rescue by taking into account the issue of accessibility. Six units of ambulance medical service (Otobaya Medical Ambulatory, Nabakevi Medical Ambulatory, Saberio Medical Ambulatory, Gali Central Regional Hospital, Kvemo Barghebi Medical Ambulatory and Oqumi Medical Ambulatory) are 100% funded from the state program, while other regional services are funded with a principle of a global budget, which implies the payment of a fixed amount of money earmarked in the budget to the service provider

on a monthly basis.

Insurance companies ensure the co-financing of the ambulance medical services in their own medical (insurance) coverage areas (regions). It operates in the following manner: insurance companies finance a monthly limit of the state program for the relevant region. In 2012 this it was 25%, in 2013 – 50%, while in 2014 and 2015 – 75% and 100% respectively.
It is worth noting that in 2013 MOLHSA plans under its declared strategy to solely implement the ambulance medical service, with the State Budget to be the only source of funding.

1.2 Audit Motivation

Main aims and goals of the State Program for Emergency Rescue adopted in 2011-2012[1] is to reduce the complications and lethal outcome in the emergency conditions. It can be achieved by timely response and high quality of service delivery. By the data of the National Statistics Office of Georgia, number of ambulance medical services rendered to the population of the country kept sharply increasing from 2000 through 2013, respectively efficient delivery of service is very important for the consumers.

Performance Report of the Ministry of Labor, Health and Social Affairs for 2013 includes the Emergency Rescue Program. Its major problem is indicated to be the high utilization of the ambulance medical services, caused by its charge-free nature, poor functional and information linkages between the ambulance medical service and primary healthcare departments (in overall, primary healthcare). According to the report, vehicle pool of the ambulance medical service is outdated in the regions and requires to be replenished with new vehicles. There is no system to ensure the high quality of ambulance medical service. Internal operation procedures need to be improved.

1.3 Aims and Goals; Audit Questions

Audit is aimed at the scrutiny of the ambulance medical service performance, leading to the reporting and recommendations on the topic. Audit has scrutinized the issues of planning, priority setting, provision of finance, management, resource use and service efficiency within the component of the ambulance medical service.
Audit Team will make the relevant conclusions by the results of audit and will share its recommendations with the relevant institutions, which will be aimed at the correction of the identified imperfections and improvement of the management system of ambulance medical services.

State Audit Service has responded to the following questions with an aim of reaching the audit goals with pre-defined audit procedures:

1. How efficiently (timely) does the ambulance medical service respond to the initiator of the call?
2. What are the mechanisms available for the quality ambulance medical service delivery and how is the service quality assessed?
3. How optimal is the funding of the ambulance medical service and use of its material-technical base?

1 Government of Georgia Decrees #77 and #92.

1.4 Audit Criteria

Audit Team has used the following documents and information in the definition of its performance criteria:

1. Available best international practice, major principles and features of ambulance medical services in different countries of the world (USA, UK, Germany, Netherlands, Italy, France, Lithuania, Latvia, Estonia, Turkey, Armenia);
2. WHO and OSHA Guidelines and reports related to the performance of the primary healthcare and its individual components, along with the ambulance medical service and emergency rescue;
3. EENA 112 service quality standards;
4. Studies and reports done by international and Georgian organizations (including the Ministry of Labor, Health and Social Affairs, GeoStat);
5. Other regulations and legal instruments regulating the ambulance medical service.

1.5 Scope and Method of Audit

Period covered under the performance audit of the ambulance medical service is 2010-2012. For the purposes of audit, database and other information collected from the auditees have also been used in the period covered by the audit (Q1 through Q3 of 2013), which have an impact on the efficient operation of the ambulance medical service.

Audit procedures have been developed to obtain answers to the main audit questions. They were used to study the main activities associated with the ambulance medical service.

Various methods of audit were used by the Audit Team to scrutinize the factors conditioning the operation, measures and current tendencies:

- Introduction and analysis of the available and internationally accepted practice, guidelines and standards;
- Analysis of the legislative base and norms regulating the ambulance medical service;
- Database analysis;
- Analysis of financial documents;
- Surveys and interviews with the auditees (relevant responsible officials).

1.6 Audit Limitations

MOLHSA does no have a database related to the priority setting and timely response to the ambulance medical service in the regions of the country, which would make it possible to identify the minute-precise indicator of delays in the delivery of an ambulance medical service in the regions. Hence, the audit based its judgment on the overall results of the monitoring towards the MOLHSA.

Analysis could not have been based on the data of 2011 as no data was available in the adequate format of the scrutiny. Respectively, problems of timely response in the ambulance medical service could not have been identified in 2011, if we take into account the fact that LEPL 112 did not operate then. Development of a database at the Emergency Rescue Centre Ltd (by capturing the response time, address, time of arrival at the destination and other information) and its availability to the audit in the adequate format was made possible only in 2012 (April-December). In addition, due to the imperfections found in the database and incomplete data, it was possible to scrutinize 80% of the available information.

2. System of Medical Priority Setting

One of the most important criteria of performance in view of the ambulance medical service is the response time. Many international sources and researchers deem it to be the main criterion. Response time is a system introduced and successfully operating throughout the world.

Criteria for the response time and classification of calls by medical priorities are a significant guarantee in leading countries of the world of an effective system. According to WHO the following EU standards and best international practice apply to the classification of calls and identification of ambulance vehicles to be sent for the respective category:

High Priority – required immediate response, when the human life is at stake.

In such cases the WHO recommends the countries to make sure that response time is 8 minutes maximum.

Medium Priority – requires quick response, when the condition of a human health is grave, though life is not at stake.

Low Priority – requires response (not immediate though), when the human health condition is mild and far from being at stake.

Main indicator for the assessment of a priority system is the time used by the brigade to deliver the ambulance medical service to the patient.

For instance, timely response on high priority cases in Great Britain implied arrival to the destination in 8 minutes from the moment of the call, which happens in 75% of total cases, while patients are transported to health institutions in 19 minutes within this priority. Timely response in the medium priority occurs in 19 minutes. Low priority implies the response in a reasonable time, which has no specific time indicator defined.

World Health Organization (WHO), Great Britain and countries of Western Europe and US Medical Treatment Association deem the response time to be the most important criterion for effectiveness.

According to the OSHA reports, ambulance medical service should have a uniform vision towards the needs and priority system of the ambulance medical service. It requires a regular analysis of inbound calls, while the priority system should be consistently improved on the grounds of the analysed priority system.

PDS is the dispatch system for the definition of priorities, which categorizes the cases of ambulance medical service. System distinguishes the emergency cases, medium and low complexity types of medical incidents, along with the applicable response times. Definition of priorities is based on the standard protocols and instructions, composed of different nosologies.

LEPL 112 subordinated to the Ministry of Internal Affairs in Georgia manages the medical categorization scheme over the calls for ambulance medical service, which mainly consists of the following 3 main elements:

- Medical surveys;
- Definition/assignation of the adequate incidence types (priorities) to alarms;
- In case of an expressed necessity, provision of support prior to the arrival of the ambulance medical service brigade.

PDS system is not introduced in Georgia, though LEPL 112 applies a certain mechanism of priority setting within Tbilisi. Audit has identified that LEPL 112 defines medical priorities by certain nosologies, though the country has no jointly defined, accredited dispatch protocols by the Ministry of Labor, Health and Social Affairs and other implementing agencies of the program.

Priority system and incidence types are not classified for the calls in regions. Respectively, response to calls is not meas-

ured by the time factor, which by itself neglects the most important principle of the ambulance medical service – timely response.

System of LEPL 112 for calls received within Tbilisi incorporates the medical incidence priorities by different colors of the ERC 112 program. It reflects high priority (critical conditions), implying the need of an immediate response, medium priority (emergency condition), implying the need of an emergency rescue and low priority (deferred conditions), when the initiator is informed about the arrival of the ambulance medical service brigade after a certain period of time (maximum deferred time is 1 hour). Preference in cases of the same priority is given to the so called risk age.

Despite the fact that LEPL 112 assigns the incidence type to individual cases with a certain mechanism within Tbilisi and brigades are alarmed according to the priorities, there is still no timeframe defined for individual cases of response. By itself, categorization of incidents does not mean that a time measurement system is enforced for the priority setting and response rate at the ambulance medical service.

As shown in the analysis of standards and best international practice, also by taking into account that ambulance medical service implies an efficient response in emergencies, each incident type (critical, emergency, deferred conditions) should have a time indicator assigned. Notwithstanding the fact that unstreamlined system of priorities is conditioned by many different factors, (for instance high volume of calls) smooth operation of the referred system is still one of the most important instruments for the optimal management of brigades and emergency response in essential cases.

LEPL 112 has been cooperating with the donor agencies and stakeholders in the period of audit. Their joint efforts were targeted at the solicitation of essential resources to ensure the introduction of the priority setting system. As for the regions, MOLHSA as a project implementation unit is developing a Draft Oder to define the standards and quality indicator system for the main stages of ambulance medical service.

On the grounds of the analysis applied to the database (280 thousand records)[2] shared by the Emergency Rescue Centre and incidence types (priorities) reported by the Dispatch Unit of LEPL 112 we calculated the number of cases per incidence types and time required for the ambulance medical service brigades to reach the patient from the moment of the call and by taking into account various applicable factors.

Chart below demonstrates the percentages of incidence types (priorities) out of the total number of calls for the ambulance medical service.

Chart 2.1: Percentages of Incidence Types out of the Total Number of Calls for the Ambulance Medical Service

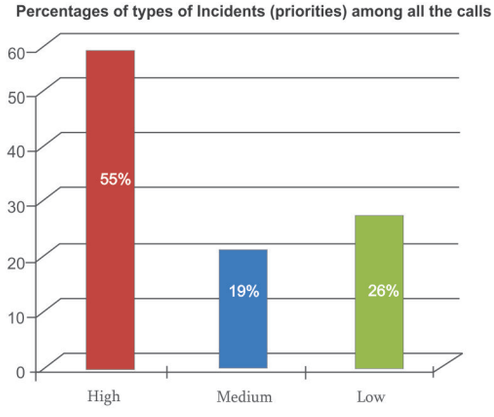


Chart evidences that majority of cases are deemed of high priority, small portion – medium priority, while somewhat more – low priority. Only 13% of the total number of calls are hospitalizations, which indicates that high priority (55%) is wrongly granted to cases.

2 According to the data shared by the Emergency Rescue Centre Ltd (for the period of 17.04.2012-31.12.2012) .It was impossible to have a complete calculation of data due to the existing deficiencies and

It is worth noting that non-emergency nosologies categorized as of low priority are simple cases of out-patient care, while the high level (26%) of low incidents in the current system are related to the problems of the primary healthcare. If priority dispatch program existed, the low priority calls would have been much higher in real sense.

As for the time of arrival at the destination – it does not differ much in any of the three types, while it should be a lot lower in the case of high priority in contrast with other incidence types.

Chart below presents the average indicator of response time (from the moment of a call through the arrival at the destination) by incidence types on the example of Georgia and UK:

Chart 2.2: Georgia (Average Time per Incidence Types)

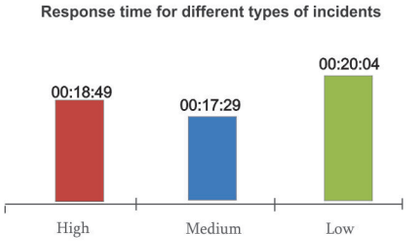
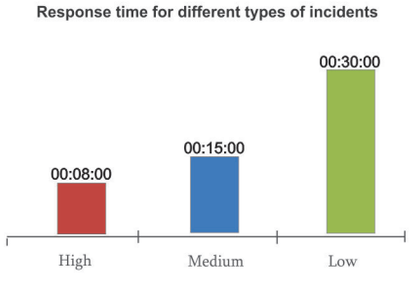


Chart 2.3: UK (Average Time per Incidence Types)



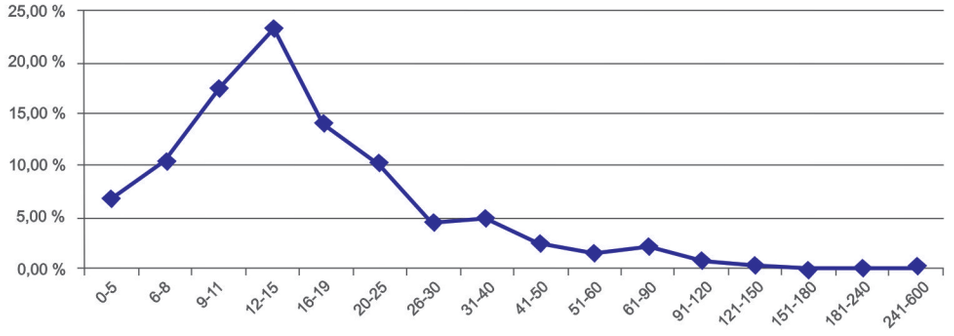
The above Charts evidence that average response time indicator (from the moment of the call through the arrival to the destination) of priorities (incidence types) in Georgia is about the same for all three, even when the average indicator of the response time among priorities should be of an increasing trend from the high (critical condition) to the low (deferred condition) priority.

Formation of a database at the ambulance medical service in Tbilisi was made possible from April through December in 2012. Respectively, analysis carries out by the Audit Team did not apply to 2 months of winter, which are usually associated with increased workload as expressed in the statistical records.

Chart below presents the percentage indicators of response cases in the applicable per-minute indicators.

incomplete information kept in the database. Respectively, Audit Team managed to scrutinize only 80% of the available data from the referred database.

Chart 2.4: Per-Minute Indicators of Emergency Response in Percentages (April-December 2012)



Only 17.30% of total number of cases in Tbilisi complies with best international practice and standards in terms of immediate response (within 8 minutes).

Audit has identified from the analysis of the database that over 1 hour was needed for the ambulance medical service to respond to a call in 4% of 280 thousand cases, which is essential as is covers over 10 000 cases.

In some cases ambulance medical service brigades need time from 2 to 10 hours to respond. There were 3000 such cases in 9 months. It is conditioned by the high volume off calls for ambulance and lack of response time for individual incidence types. It is worth noting that incorrectly defined priorities may include some emergency cases in the referred 3000 incidents thus requiring immediate response.

On average, ambulance medical service responds in 19 minutes (from the moment of the call to the arrival to the destination). It substantially lags behind the applicable indicators in European countries, where immediate response occurs in 5-8 minutes, while the maximum time frame is 15 minutes. USAID report, which refers to the Armenian ambulance medical service, indicates that average response time for the ambulance medical service in Yerevan is 14 minutes[3], which is a pretty late considering the size of the city. Considering all the aforesaid, 19 minutes as an average indicator can not be deemed as a positive occurrence.

Official statistics, tendencies and analysis could not have been found by the audit team in the records of the program implementation organizations on the medical priorities. Audit has identified that no annual quantitative analysis is available for the definition of priority (incidence type) volumes. Such work would ideally lead to the permanent improvement of a priority system and response time indicators, which is an uninterrupted process under the common practice.

Advanced System of Time Measurement

Auditees have submitted their response time indicators calculated a principle of average numbers.

US Ambulance Medical Service Association clarifies[4] that average indicators were an acceptable method of time measurement by old practice, while the advanced approaches are based on the so called fractile measurement model, which ensures the definition of a response time for individual cases, so that the average numbers do not allow for the equality principle to be neglected[5]. It means that project implementing organization should not take into account the average indicator of response time for a certain period. Currently it is practiced to capture the response time in average indicators for all the calls (for instance average response rate on ambulance medical service this year has been 19 minutes). Principle of a fractile

3 USAID –Situation Assessment of Ambulance Service in Armenia
4 Best Practices in Designing, Managing and Contracting for Emergency Ambulance Service.
5 Please see Chart N4 and Best Practices in Designing, Managing andContracting for Emergency Ambulance Service

measurement implies the number of incidents in each time period (for instance, 900 responded cases in 1 hour, 800 cases responded in 2 hours, 200 cases responded in 5 hours, etc.). It is an effective means for the quality assurance and control of standardized response time.

Conclusion:

- Considering the previously mentioned, there is no nation-wide priority setting system introduced in the country, which is commonly practiced elsewhere and based on the dispatch protocols. Also, auditees do not carry out a regular analysis of data to identify the trends, to permanently monitor the timely response and adequate per-minute data, to ensure and control the quality in line with the monitoring reports.

Recommendations:

- With coordination of the Ministry of Labor, Health and Social Affairs it is important to develop the ambulance dispatch protocols together with LEPL 112. Ambulance dispatch program based on such protocols should be introduced in the system of LEPL 112 with an applicable response time per incidence types. It is important to develop the quality assurance mechanisms by priorities and abolish unreasonable late or no arrival in response to the calls for ambulance medical service. Also, applicable statistics program need to be introduced in the system of LEPL 112, which identifies the response time indicators and will thus become the uninterrupted source of information for further monitoring and assessment to different actors (MOLHSA, Emergency Rescue Centre LEPL of Tbilisi Municipality).

- As a result of the analysis of ambulance calls and degrees of priority, it is possible to identify the no-emergency nosologies in the adequate age groups, which are in high demand. In such cases different mechanisms should be enforced with coordination of MOLHSA to make sure that ambulance medical service is less used as a portable general practitioner (GP) in the country.

3. Territorial Distribution of Ambulance Brigades to Ensure the Efficient Response

3.1 Distribution of Ambulance Medical Service Brigades in the Regions of Georgia

State Program of Ambulance Medical Service is adopted with a Government Decree [6] in the regions of the country, which defines the following:

Emergency Rescue Service Brigades and specialized sanitary vehicles will be equipped by the following calculations:

a) No more than one brigade per 30 000 persons;

b) In some cases it is possible to make an exception to ensure the maximum accessibility.

In line with best international practice it is essential to have the ambulance medical service brigades distributed by the optimal geographic setting, population size and such important practice as a historic number of calls for ambulance medical service[7]. As a result of a search for best practice to define a quantity of brigades it was witnessed that in most countries the population size is differently correlated with individual brigades. Examples of several countries are indicated in the table below:

Table 3.1.1:[8] Population Size per Ambulance Brigade in Different Countries

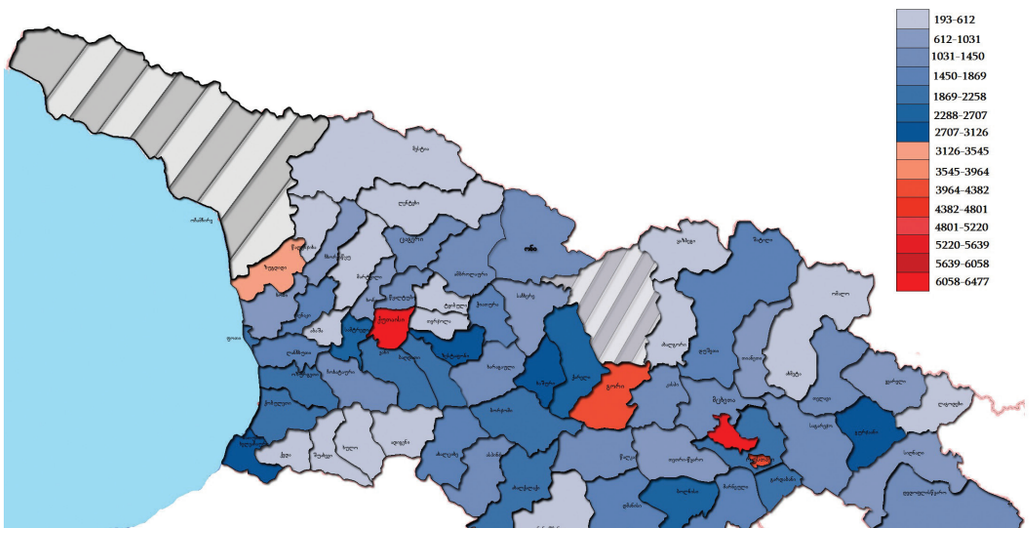
Country	Size of Population Per Ambulance Brigade
Austria	3 500
Finland	6 750
Bulgaria	7 500
Lithuania	11 700
Estonia	15 000
Poland	27 500
Georgia	30 000
Turkey	32 600

Analysis of the size of population in different municipalities of Georgia[9] and number of ambulance brigades in relevant administrations has identified that apart from one municipality (Akhalkalaki) with 32 400 people per ambulance brigade, while all the others have less than 30 000 people per ambulance brigade.

Average size of population per brigade is 14 848 people throughout the country. Minimum size of population per ambulance brigade is 2450 (in Kazbegi Municipality). It is explained with the maximum accessibility of ambulance medical service[10]. Nevertheless, current distribution of ambulance brigades in the country is not optimal.

6 Government Decrees N77 and 92 in 2011-2012;
7 EMS Structured for Quality: Best Practices in Designing, Managing and Contracting for Emergency Ambulance Service
8 Ambulancecare in Europe, Ambulancezorg Nederland, Januari 2010
9 National Statistics Office of Georgia;
10 Government Decree N92, Article 8.2.B;

Map 3.1.1: Number of Ambulance Calls per Brigade by Municipalities



Size of population per ambulance brigade exceeds 20 000 people in about 25% of municipalities, which leads to the increased workload in such locations, while in some other municipalities one brigade has a much lower population size to cover with ambulance medical service. For instance, Kaspi Municipality has over 17 500 people per ambulance brigade. Each team has to respond to 1400 calls for ambulance a year. However, Kareli Municipality has about 26 400 people per ambulance brigade. Each team on average has to respond to 2 705 calls for ambulance a year.

Map 3.1.1 presents the number of calls for ambulance per brigade in local municipalities (June 2012 through May 2013[11]. In the ideal case, the map would be presented in a single color if international practice were to be considered for the distribution of ambulance brigades, not only by the population size and geographic principles but rather by the historic number of calls for ambulance. Respectively, all the brigades within the country would have the same workload. It is possible that by taking into account the territorial accessibility, high terrain regions would have brigades covering lower size of population, though even in such cases the map should not be so colorful in terms of the workload.

Analysis of the numbers of calls for ambulance and brigades has demonstrated that about 33% of municipalities have about 1000 calls for ambulance per brigade in any given year. In contrast withy this, about 27% of municipalities have about 2000-6500 calls for ambulance per brigade, while about 40% - in the range of 1000-2000 calls.

Tbilisi has the highest volume of average annual calls for ambulance. It is 6 478. It becomes clear that some brigades have a higher workload than others in different municipalities.

One of the reasons of a different workload of ambulance brigades is their far-from-optimal distribution by municipalities. For instance, Dmanisi Municipality with about 3150 calls for ambulance a year, has 2 brigades and respectively each of them covers 1575 calls for ambulance. Tetritskaro Municipality with about 4160 calls for ambulance a year has 5 brigades and each of them covers 830 calls a year. It needs to be noted that the referred municipalities are quite similar by their landscape and density of population. Respectively, such difference in the calls for ambulance per brigade can not be explained by the accessibility or density of population. Also, Ozurgeti Municipality with about 8140 calls for ambulance a year, has 4 brigades, while Tskaltubo Municipality with nearly 2.5 times less calls for ambulance has 3 brigades assigned to it. Abasha and Zestaponi Municipalities have 3 brigades each with about 1 110 and 8 400 calls for ambulance respectively. Each covers 372 and 2 800 calls for ambulance in their applicable municipalities.

11 Information provided by LEPL 112;

Conclusion:

> As mentioned before, funding of the ambulance medical service in regions occurs with a global budgeting principle and each branch is funded by taking into account the number of brigades – in a proportional manner, rather than by the number of calls for ambulance as in Tbilisi. Different indicator of workload of individual brigades confirms that brigades are not distributed in an optimal manner. It leads to disproportions of the global budget allocations by municipalities with the workload of ambulance brigades.

Recommendation:

> It is essential that the MOLHSA ensures the optimal distribution of brigades and proportionate funding by municipalities also by taking into account the size of population and geographic principles, demand on ambulance medical services and other important causing factors by putting exceptions aside.

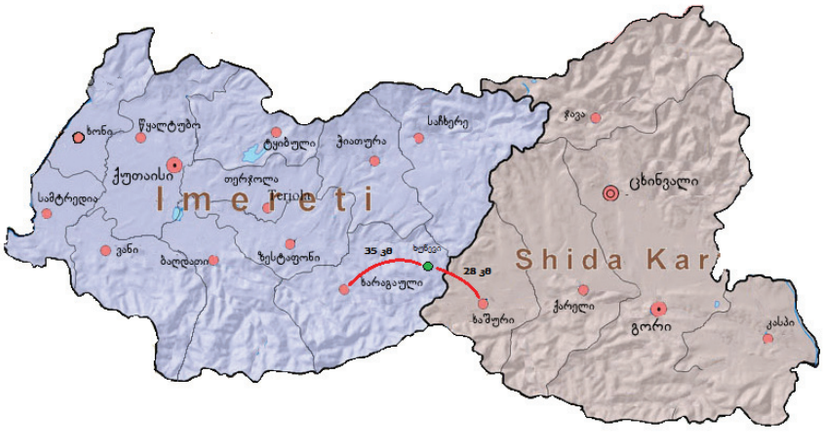
3.2 Coordination of Ambulance Medical Service Brigades

Different healthcare clinics operating in neighboring municipalities are responsible for the follow-up on the calls for ambulance made within their own municipalities. It leads to a different workload of these brigades.

In emergency cases MOLHSA coordinates the support of neighboring ambulance brigades through its Department of Coordination and Regime of Emergencies and Disasters, though usually they can not respond to the ambulance calls from neighboring municipalities even if the destination is closer. Such cases we may considered on the example of the below indicated case.

According to the example depicted in Map N2, call for ambulance made in Khunevi Village is responded by a brigade from Kharagauli Hamlet, which is 35 kilometers away from the destination. At the same time, ambulance brigades based in Khashuri can not follow up on the call as they belong to another insurance company, no matter that they are in 28 kilometers away from the destination. At the same time, it needs to be mentioned that within this area - from Khashuri to Khunevi – in 28 kilometers there are more villages that are mandated to cover Kharagauli Hamlet with ambulance medical services, while in real terms they are closer in territorial sense than Khashuri.

Map 3.2.1: No Consideration of Closest Distance for Efficient Response



Map 3.2.2: No Consideration of Closest Distance for Efficient Response

The same problem is reflected in Map 3, which presents Gombori case. Sagarejo ambulance brigade responds to the calls originating in Gombori. It is 43 kilometers away. Telavi would have been a more suitable place for sending an ambulance brigade though. It is 35 kilometers away from Gombori. It would substantially reduce the time to destination. Insurance companies operating in the referred municipalities are different.

Conclusion:

> Considering the aforementioned, response to calls for ambulance does not follow the principal of an optimal distance in Georgia. Respectively, it increases the response time.

Recommendation:

> It is essential for the MOLHSA to ensure the follow-up on calls for ambulance with a principle of an optimal time to make sure that efficient response is made in emergency cases.

4. Workload of Ambulance Brigades and Vehicles in Tbilisi

Non-Territorial Response

Non-territorial response to the calls for ambulance is one of the significant indicator of the brigade workload. Non-territorial response of ambulance medical services considerably reduces the response time.

System of ambulance medical services is based on exactly the territorial principle in all the countries.

In contrast from regions, ambulance brigades in Tbilisi may respond to the calls for ambulance originating from any district of the capital city.

Non-territorial response is mainly needed when none of the brigades in the district of the patient are available.

Statistical data on the non-territorial response was not recorded in the audit period by any of the participants of the ambulance medical service, no matter that it is essential indicator for the analysis of territorial distribution of ambulance brigades and for the improvement of service quality.

Through interviewing the LEPL 112 and Emergency Rescue Centre Ltd we have identified that high volume of calls for ambulance is observed in the capital city have led to the high number of non-territorial response.

LEPL 112 launched a statistics application of its IT system in the period of audit, which will automate the data capturing process in the system and will generate the information on non-territorial responses.

Conclusion:

- Non-territorial responses have an impact on the timely response. Respectively, it is essential that such types of calls for ambulance are recorded and analyzed. Program implementing organizations will be thus able to eliminate the barriers of an efficient ambulance response in the conditions of an optimal distribution of brigades in the capital on the grounds of the above mentioned data.

Recommendation:

- It is essential that LEPL 112 launches the respective statistical application of the software, which ensures the data capturing of non-territorial response.

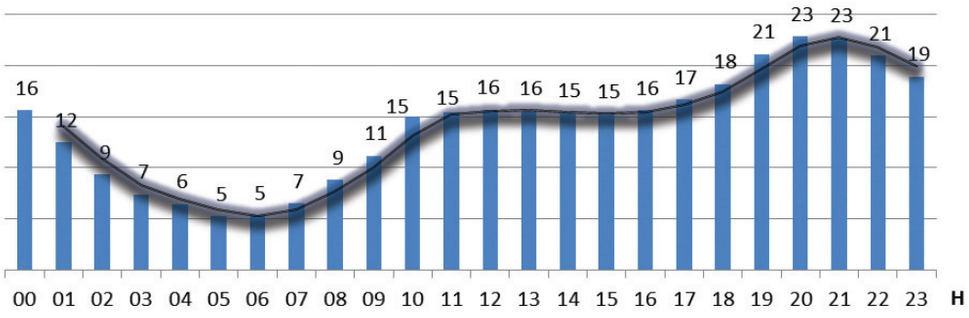
Increased Peak Time Vehicle Use

It is a commonly declared practice in the world to define the number of staff in a team by the peak hours, thus meaning more people working in an ambulance brigade at a peak time, compared to other times of the day (Peak-Load Staffing). This method enables the provider of an ambulance medical service to manage brigades in an optimal manner on the grounds of an accurate definition of public demand and reduce the cases of late or no arrival at the destination while responding to a call for an ambulance. At the same time, though, we need to consider that this system should follow the principle of cost-efficiency.

Excess workload of ambulance brigades in Tbilisi, especially in peak time is a serious problem. Late or even no arrival cases increase in such circumstances. Excess load on medical doctors in a 24 hour shift (from 10:00 a.m. of one day to 10:00 a.m. of the following one) working in the ambulance brigade badly affects their quality of service, thus increasing the risk of deteriorated health condition of patients. As a result of audit and on the grounds of the scrutinized number of calls for ambulance, it was identified that apart from the exceptional cases, there were spells of time within a 24 hour cycle, when the demand was notably rising. Findings of the referred analysis are indicated in Chart 6 below, which clearly evidences that peak of calls falls on the evening time – from 6:00 p.m. to midnight in contrast with any other time of the day.[12]

12 Analysis is based on the information provided by the Emergency Rescue Centre Ltd, which cover a period from April through December 31, 2012.

Chart 4.1.



Tbilisi has been served by 80 brigades during any single day. By October 2013 data, 12 brigades were added to the referred number to share the workload from 7:00 p.m. through 7:00 a.m.

There are about 31 licensed, private ambulance medical services in Tbilisi. Program implementation bodies have no information on the service fees charged by them for such type of medical assistance or on the material-technical base available at such institutions.

Number of vehicles increases in Tbilisi along with the increased number of ambulance brigades. Respectively, additional transportation means are purchased thus associated with substantial expenses. In the conditions of undeveloped system of medical priorities, increased number of calls for ambulance in frequent cases originates from unobjective reasons. Such circumstances may be corrected in a long run or short-run – by taking into account the complexity of problems.

Conclusion:

> Number of ambulance brigades and vehicles are increasing in proportion to the increased number of calls for ambulance, which is by itself associated with major expenses.

Recommendation:

> It is important that Municipality of Tbilisi consider the use of alternative means (licensed private ambulance medical services) at times of high workload of ambulance brigades to ensure the cost-efficiency of its expenses. Procurement and maintenance of vehicles is associated with substantial expenses. Hence, program implementing organizations should carry out an accurate analysis (by comparing the use of alternative means with operation and capital expenses to be made on the procurement of additional vehicles and creation of brigades) to identify the opportunities of saving budget resources of the program.

5. Qualification of Ambulance Medical Service Brigades and Medical Protocols

Two models exist in the world for the ambulance medical service: Anglo-American and Franco-German. The latter model implies the staffing of ambulance medical care with doctors, while the Anglo-American – with paramedics/doctors trained in the Basic Life Support (BLS), Advanced Cardiovascular Life Support (ACLS) or Advance Life Support (ALS) methods. Both models require the use of modern instruments and technologies to achieve the highest degree of pre-hospital care management.

According to the Anglo-American model, BLS, ACLS and PHTLS qualification is mandatory to all the paramedics to be submitted in certain periods of life-long training process.

Development of the labor force is one of the measures of efficient performance[13]. Number of days spent in training throughout a year by an individual employee is a measure of the labor force development in the ambulance medical service. There are standards of qualifications and competencies, according to which syllabus should be developed for the training programs.

Ambulance medical service model practiced in Georgia is not clearly identifiable. It contains elements of both Anglo-American and Franco-German models. For instance, staffing of ambulance brigades with medical doctors is an element of Franco-German model, while the training program is based on the Anglo-American model within which brigades are staffed with specially trained paramedics, rather than medical doctors.

Protocols adopted by the Minister of Labor, Health and Social Affairs are not on purpose developed for the ambulance medical service. However, it needs to be mentioned that a number of urgent pathologies and disease protocols/guidelines exist to be used by ambulance medical service providers.

At this stage MOLHSA carries out work for the development of new protocols and update of existing ones with participation of the relevant sectorial associations.

In addition, Emergency Rescue Centre Ltd[14] submitted protocols of clinical condition management at pre-hospital stage to the Ministry of labor, Health and Social Affairs for approval. Emergency Rescue Centre of Tbilisi is guided in its operation with state protocols of clinical condition management at the pre-hospital stage after their examination and with the Order of Minister of Labor, Health and Social Affairs. They are not enforced in the regions of Georgia.

Georgia belongs neither to the Anglo-American nor to Franco-German models by its major features of ambulance medical services, though staff trainings and improvement of qualifications are the life-long process for both of them.

Senior and Junior Doctors employed at the ambulance medical care have to comply with a pre-defined qualification requirements under the Order of the Minister of Labor, Health and Social Affairs[15]. Unspecialized[16] ambulance brigades may be headed by the specialized medical doctors, apart from the subjects certified in certain medical specializations[17]. At the same time medical doctors willing to join the ambulance medical service, should have state certificates in the applicable medical specialization, should have been trained in the special field or have a year's work experience at a similar position (medical doctor in an unspecialized ambulance brigade).

All the programs, which allow for the training in a special field, should be accredited by the Professional Development Council of the Ministry. Currently, the following programs are accredited for the specialization of medical doctors for the ambulance care by the referred Council:

13 Average days of training per employee per year. Ambulance Victoria Strategic Plan.pdf
14 Letter, dated April 25, 2012 (N581, N31647 25.05.12);
15 Order 2009 წლის 16 ივლისის N244/N dated July 16, 2009;
16 In the case of a specialized ambulance brigade (pediatricians, critical, cardiovascular, etc.) medical doctors should have state certificate evidencing the holder's medical specialization.
17 Psychiatry, narcology, sexology, psycho trophy, child psychotherapy, medical genetics, homeopathy, clinical pharmacology, medical parazitology, lab medicine, pathologic anatomy-clinical pathology, forensic medicine, medical radiology, ultrasound diagnostics, computer-aided topographic diagnostics, magnetic-resonance tomography, radio-isotopic examination, radiation therapy (list of medical specializations is defined in the Order N136/N of the Minister of Labor, Health and Social Affairs On the Definition of Core and Associated Medical Specializations and Sub-Specializations issued on April 18, 2007).

- Emergency Care[18];
- Pre-Hospital Emergency Medical Service[19];
- Training Course in Emergency Medical Service[20].

Ministerial Order also defines the major requirements towards Junior Doctors. It also sets qualifications, which are mandatory for the employment at the position of a Junior Doctor.

As for the trainings for doctors, MOLHSA commissioned a cycle of the training course in Tbilisi and Batumi in 2010 for Emergency Medical Care and Disaster Management. Hospital and Pre-Hospital Care module was delivered within the Emergency Medical Care Program (including the doctors of ambulance medical services), while the Managers of Health Facilities (including the doctors of ambulance medical services) were trained in the module of Disaster Management.

Table below presents the training sessions delivered by the MOLHSA in 2010-2011:

Table 5.1: Number of Trainings Held by MOLHSA Throughout the Country:

Training	2010	2011
Emergency Care	26	
Disasters and Emergency Response Program	8	
Public Health and Disaster Management		6

The above Table demonstrates that minimum number of trainings was delivered by MOLHSA in recent years. At the same time, training in Disaster Management was delivered only to 26 medical doctors, while other participants were managers of health facilities. In 2012-2013 no trainings were held by MOLHSA.

As for the capital city, trainings were held in 2010–2013 on the following topics Electric Cardiographs and Defibrillation, Basic Life Support (BLS) Methods, Advanced Cardiac Life Support (ACLS), Triage, Urgent Cardiovascular Pathology Management at the Pre-Hospital Stage.

Table below presents the number of training attendees in the given years.

Table N5.2: Number of Training Attendees by Years

Training	2010	2011	2012	2013
Electric Cardiographs and Defibrillation	134	20		
Basic Life Support (BLS) Methods	425	12	427	196
Advanced Cardiac Life Support (ACLS)	94			
Triage			313	
Urgent Cardiovascular Pathology Management at the Pre-Hospital Stage				302

Tables above evidence that in contrast with regions of the country, medical doctors in Tbilisi are trained more intensively. However, in both cases these trainings are not regular and far from being sufficient. In comparison with the best practice and major principles of ambulance care, trainings in Georgia are not standardized and permanent. There are no precise qualification data on what type of trainings and in which periods should the medical doctors get trained. Respectively, proficiency level of medical doctors in Tbilisi and regions differ from each other.

18 Program delivered to the medical doctors of ambulance care; implemented by – Tbilisi State Medical University (Namely, Post-Graduate Education and Life-long Professional Development Institute), Head of Program: I. Maisuradze; Duration 2 months (Accredited on April 4, 2011 at Meeting N2, Accreditation Ref. RS-219);
19 Program for medical doctors of ambulance care; implemented by – Referral Medical Treatment Centre Ltd.; Head of Program: K. Chikhradze; Duration: 40 days (265 Hours); Accredited at Meeting N3 held on May 30, 2011; Accreditation Ref. RS-225);
20 Head of Program: T. Giorgadze; Duration - 41 Days (306 Hours); (Accredited at Meeting N4 held on July 27, 2011; Accreditation Ref. RS-233).

Conclusion:

- Considering all the above-mentioned, we may conclude that trainings held for the medical doctors of ambulance care are not regular and not every doctor is involved. Level of trainings differs in Tbilisi and in regions. Training material is also different for doctors. System is not standardized throughout the country. No protocols and standards have been introduced for medical care in the country.

Recommendation:

- MOLHSA should ensure the accreditation of training programs, standardization of protocols/guidelines for the entire country and by taking into account the international standards and best practices. It is also important that MOLHSA standardizes the qualification indicators, mandatory training programs and their periods in cooperation with Emergency Rescue Centre and in line with the models of ambulance care. It will facilitate the establishment of the ambulance medical service model in Georgia and will also improve the quality of service delivered to patients.

6. Hospitalization of Patients

Government Decrees on State Healthcare Programs envisage the hospitalization of patients if the medical indication makes it necessary to the nearest health facility of the respective profile. There were 109 533 cases of patient hospitalization in the regions of Georgia (excluding Tbilisi) last year, which is 28% of the total calls for ambulance in the regions of the country. In the capital city there were 70 432 cases of hospitalization, which is 13% of the total number of calls for ambulance in Tbilisi. Efficient management of the hospitalization process requires the adequate performance of operating connections and systems.

Individual reports of MOLHSA surface the problems associated with hospitalization in the regions of the country and cases of violations in locating the closest hospitals. As for the capital city, patients are hospitalized if necessary by the Emergency Rescue Centre Ltd on the grounds of an Internal Order adopted with a plan of hospitals. Priorities are given to the principle of the closest health facility, though due to some problems, it may be breached and ambulance brigades may need to transport a patient from Isani-Samgori District to Didube-Chughureti Health Clinics for instance.

One of the problems identified by the Audit Team in scrutinizing the hospitalization topic was the high volume of rejections made by hospitals to admit the patients. By official records, over 500 ambulance care patients have been refused to be admitted by Tbilisi health facilities in August. Refusal is conditioned by the lack of material-technical or human resources (insufficient number of doctors, insufficient number of beds at health facilities) or mere subjective reasons. Interviews have made it clear that what the latter actually means is the social status of the patient, which may serve as a reason for his/her rejection to treat. Alternatively, hospitals may deny an ambulance care patient on the grounds of the insurance company, policy or package s/he subscribes to. Interviews have also identified that, on the other hand, some clinics complain that ambulance medical service does not reach out to them and to let them deliver medical care to patients. Emergency Rescue Centre Ltd explains this fact by instability of hospital care at such facilities, therefore preferring to transport patients to such hospitals where treatment is timely and adequate.

These misunderstandings or dual nature could have been easily solved by applying an electronic reference. It would allow the hospitalization managers, who administer and supervise the transportation of ambulance care patients to the nearest

health facilities, to select the destination there and then with an assurance that for the given moment it has all the essential resources to deliver the timely and adequate care to the patient. It would also reduce the cases of doubtful, unverified refusals to admit the ambulance care patient. Such references (Real Time Hospital Resourse Availability)[21] are widely and successfully practiced in various countries of the world Western Europe, USA, UK)[22][23] Design and development of such a references tool was one of the most important recommendations of USAID to Armenia.[24]

Database of health facilities has already been developed in Tbilisi. It covers information on the services available within 24 hours. This tool makes the patient hospitalization to the nearest health facility with adequate material-technical resources easier in Tbilisi in any given moment. Scheme for the referred database was developed in 2013 by Emergency Rescue Centre Ltd in cooperation with the MOLHSA, but was enforced only in the capital city. Nevertheless, medical doctors in ambulance brigades still find it difficult to see the available beds at health facilities, when they need to hospitalize a patient to the nearest medical care provider.

In 2013 MOLHSA adopted the Rules on Hospitalization for the Healthcare Facilities. According to the referred Ministerial Order all the medical care providers are obliged to upload passport data of patients currently occupying their beds, along with the data on available beds, blood stock and medical equipment.

Conclusion:

> Principle of patient hospitalization to the nearest healthcare facility is violated. At the same time, cases of patient rejection by hospitals are rather high in numbers. It may have a significant impact on the health condition of individual patients and increase the lethal outcome indicators.

Recommendation:

> It is important that MOLHSA ensures the availability of a single scheme of hospitalization for the entire country, along with its use by ambulance medical service brigades and other implementing organizations of the program. It will simplify the management and organization of the process of hospitalization. MOLHSA should also ensure the review the cases of ambulance patients declined by healthcare facilities. They should study the reasons and avoid similar cases from happening by following up on them. It is essential to ensure the hospitalization of ambulance patients to the closest healthcare facilities to avoid the deterioration of their health conditions.

21 Emergency Medical Services Systems in the European Union. WHO, 2008
22 National Hospital Available Beds for Emergencies and Disasters (HAvBED) System; Agency for Healthcare Research and Qualaity; 2005.
23 Hospital Available Beds for Emergencies and Disasters A Sustainable Bed Availability Reporting System; Agency for Healthcare Research and Qualaity; 2009.
24 Situation Assessment And Improvement Strategy Of emergency Care And Ambulance Services In Armenia

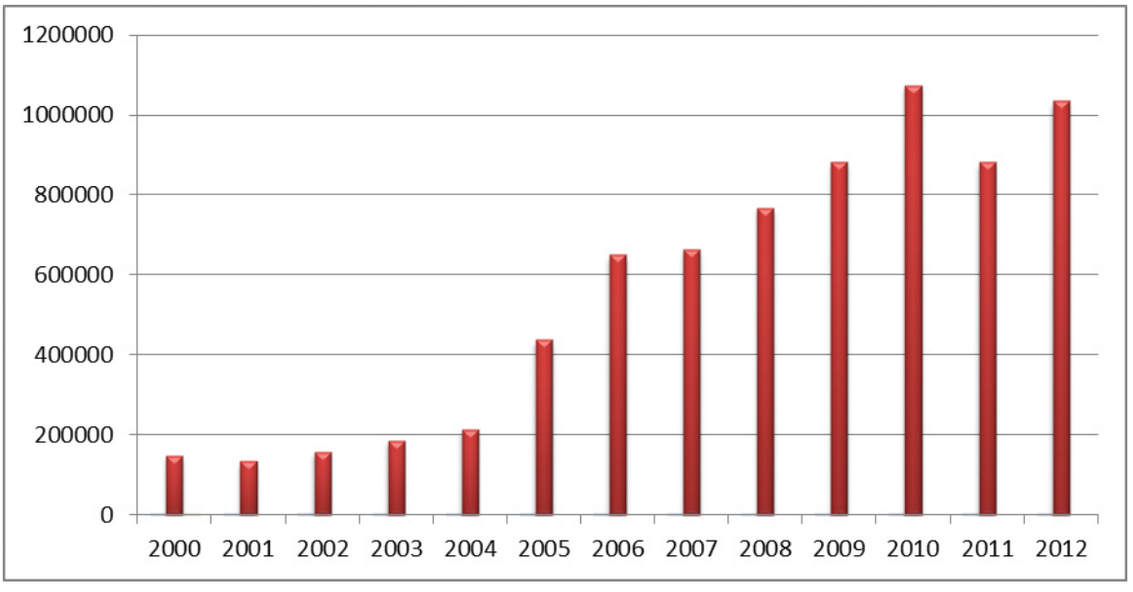
7. Increased Number of Calls for Ambulance

7.1 Impact of Primary healthcare on the Number of Calls for Ambulance

Demand on ambulance care in Georgia has been increasing over years. In 2011 there were 417,146 calls, while in 2012 - 468,309 calls.

Chart below presents the number of population served by primary healthcare system:

Chart 7.1.1 [25]



Increase of calls for ambulance should be based on objective factors.

Positive factor of the increased number of calls for ambulance in Georgia is the affordability of emergency care, increased quality of service and public trust. Negative factors include the unsatisfactory condition of primary healthcare, low public awareness on the affordability of certain healthcare services in the country.

Number of patient referrals to primary healthcare facilities in 2007–2011 per capita has been stable – equaling to 2.1 on average. Georgia is second last in the World Health Organization (WHO) list in the region of Europe. As it becomes clear from the Performance Report of the Healthcare System in 2012, primary healthcare system does not serve as a so called gate keeper. Linkages between the primary healthcare service providers and the hospital sector are weak.

Conclusion:

> Condition of primary healthcare greatly conditions the increasing demand on the ambulance care. It is directly linked with a huge number of so called low priority calls for ambulance, which may be brought down to minimum if the primary healthcare operated efficiently.

Recommendation:

> It is important that MOLHSA uses all the available leverages to increase the role of primary healthcare and reduce the number of non-emergency calls for ambulance, along with the associated expenses.

25 Source: National Statistics Office of Georgia.

7.2 Impact of Information and Public Awareness Initiatives on the Number of Calls for Ambulance

Different countries of the world employ multiple means to reduce the increasing number of calls for ambulance. This goal is reached through the increased public awareness on specific cases when the emergency number should be dialed. Provision of information to general public is the most common practice in such cases.

Some countries use a mixture of instruments concurrently to reduce the number of calls for ambulance. For instance, public awareness campaign was held in South Wales, whereby people in the streets held posters in their hands, while doctors spoke on TV and directly with general public to explain what constitutes to emergency cases and when should they call for ambulance.

Charter of LEPL 112[26] elaborates rules for action and operation for cases of ambulance and emergency under the scope of competence of 112 to better educate consumers and increase public awareness.

Public relations (PR) activities have been carried out by the respective unit of LEPL 112 for their far reaching goals. Specific actions, projects or cooperation serve to two main goals: public awareness on the emergency telephone number and reduction of untargeted alarms to 112, which ultimately lead to the increased civil education.

On the grounds of information shared by LEPL 112, PR activities carried out in the period of audit aimed at the increased public awareness, while recent actions were focused on the increased public awareness.

Conclusion:

Increased public awareness is the most important factor for the reduction of non-emergency calls for ambulance.

Recommendations:

- It is important that LEPL 112, together with MOLHSA, Municipality of Tbilisi and other applicable organizations cares about the increased public awareness to reduce the number of irrelevant calls for ambulance by applying various educational, advertising and informative instruments so that untargeted calls get identified and reduced.
- It is important that activities towards this end are intensive and regular.

7.3 Lack of Consultancy Services for the Reduction of Low Priority Calls for Ambulance

Different countries practice a telephone advisory service delivered to the call initiators.[27] It was introduced after identifying a tendency of visiting patients with minor who had no need of hospitalization. In addition, patients would call the ambulance medical service solely to get a doctor's advice.

There are two types of models by taking into account the international best practice:[28]

Patients, initiating a call for ambulance are advised at 112 Centre on what needs to be done in a given situation and then they are referred to the closest healthcare facility.

26 Order of the Minister of Internal Affairs N1073, Article 3 (f);
27 "Hear and Treat"Transforming NHS ambulance services, WPI Analysis of Emergency Medical Systems Across the World
28 WHO report about European EMS systems including ambulance

When the operator learns that the damage or complaint is not life threatening, s/he refers the call initiator to the Medical Consultancy Centre.

To satisfy the increased demand on telephone consultations in a quality manner, operators get specialized training to deliver quality response. They should have medical education and undergo specialized training syllabus and framework competences.

United Kingdom was one of the first countries, which introduced this system. Since then calls have been increasing annually along with their percentage indicators that were completed with a telephone conversation. From May 2004 through February 2005, in the inception period of the service launch 5609 patients accepted the telephone service. From 2007–2008 through 2009–2010 number of such calls reached 230,500 (3% of the total number of calls for ambulance)[29], which was twice as much in 2011-2012 - 5.2%, while in 2012–2013 statistically these calls amounted 398 891 out of 6 630 867, i.e. 6%.[30] According to the statistics of 2012–2013, repeated calls within 24 hours from the completion of the call with a telephone medical advice amounted 51,955, i.e. 13% of the calls for ambulance completed with a telephone conversation.

Many countries follow the British example and practice. They include Armenia, where telephone consultations amount 5% of the total number of calls for ambulance, which are delivered by medical doctors working at the dispatch centre of the ambulance medical service.[31]

In the conditions when the so called low priority calls (non-emergency, deferred cases) amount to 26% of total number of calls for ambulance and when the brigade only delivers a medical consultation to the patient or administers a minor outpatient care. Georgia does not have a so called Hear & Treat consultation service.

Budget resources can be saved substantially with the consultation service. According to the global practice, it reduces the number of follow-up visits (by ambulance brigades) by 5-10 % of total number of calls. Respectively, if we calculate the potential results from the statistical data of 2012-2013, 5% (minimum level) of consultation service would have reduced the number of ambulance visits to 24 000 cases, ultimately saving about 1 million GEL (one visit is priced at 40 GEL).

Conclusion:

> Along with the increased public expenses, high volume of ambulance calls affects the timely response and quality of service. One of the mechanisms for solving the problem is the introduction of a consultation service.

Recommendation:

> It is important that MOLHSA, program implementing organizations in coordination with LEPL 112 acting as a recipient of calls for ambulance, introduces the alternative consultation means to reduce the number of irrelevant calls (follow-up visit by an ambulance brigade) and respective expenses.

29 Department of Health – Transforming NHS ambulance services. UK's NAO
30 http://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/
AmbSYS-TimeSeries-July-2013
Ambulance Systems Indicators Time Series to July 2013 (XLS, 91KB)
Osha (Office Of Strategic Health Authorities)
31 Armenia emergency care situation assessment – USAID,HS_STAR

8. Funding of Ambulance Medical Service Program

Ambulance medical service program is implemented in the capital city by the Municipality of Tbilisi, while in the regions of the country – MOLHSA, within a program component. Total budget allocation for the ambulance medical service in 2011 amounted 28,203,758 GEL, while in 2012 - 33,085,000 GEL.

Rules for Funding Developed for Regions of the Country in 2011

Program in the regions is financed with a global budget principle. Insurance company defined in the Government Decree [32]ensures the co-financing of ambulance medical care within its coverage area (insured region) within 25% of the monthly limit set for the respective region in 2012, 50% in 2013, 75% in 2014 and 100 from 2015. Otobaya Health Centre, Nabakevi Out-patient Care, Saberia Health Centre, Gali Central Regional Hospital, Kvemo Barghebi Health Centre, Oqumi Out-patient Care are fully financed.

With the referred strategy and model, ambulance medical service program, emergency rescue program defined for beneficiaries should have become part of the insurance package. Though, due to the current problems in the regions, MOLHSA intends to make amendments to its strategy and it will become the sole implementing organization of ambulance care.

Rules for Funding Developed for Tbilisi in 2011

In the period of audit, ambulance medical service in the capital city is delivered by the Emergency Rescue Centre Ltd. Municipality of Tbilisi has concluded a Tender Agreement, according to which information on past performance was submitted electronically at the end of every month (by indicating the number of calls for ambulance within the month and personal data of patients), which served as a basis for payment, priced at 40 GEL a case. As for the insured patients, hand-over protocols were institutionalized from 2012, whereby the relevant unit of the Municipality would input the details of ambulance medical service rendered to patients, number of individual cases and identity of insurance companies. Finally, these insurance companies were billed. No agreements were concluded with insurance companies from 2013.

State and Private Insurance Overlapping

Many people benefit of private (non-state) insurance in Georgia. Insurance packages mainly include the emergency rescue. Some insurance companies have their own vehicles. In addition, there are private ambulance care companies. With an aim of delivering the ambulance medical services, insured individuals would still call LEPL 112, which sends a brigade funded under the state insurance program. As the insurance companies are not involved in the payment for such service, budget resources are spent on individuals who have private insurance in their private health insurance packages.

Below please find the number of active non-state (corporate and individual) insurance policies used in 2011-2012.

32 Resolution #165, 7.05.2012

Table 8.1:

Number of Issued Insurance Policies by the Year Close			
		2011	2012
Tbilisi	Number of active policies of non-state insurance beneficiaries	13,061	13,704
	Total number of active policies issued to corporate clients	147,819	109,773
Regions	Number of active policies of non-state insurance beneficiaries	6,362	4,106
	Total number of active policies issued to corporate clients	24,407	81,526
Consolidated Data[33]	Number of active policies of non-state insurance beneficiaries	2,882	6,424
	Total number of active policies issued to corporate clients	116,457	220,179

Analysis of the insured population has identified that in total as of December 31, 2011 number of active policies issued to private, individual insurance subscribers amounted 310,988, while as of December 31, 2012 - 435,732 policies and in the first 8 months of 2013 (August included) - 389,888 policies. Respectively, number of private (non-state) insurance subscribers in the indicated period has been increasing. Value of work delivered by insurance companies in 2012 within Tbilisi amounted to 1,420,000 GEL.

From 2013 no agreements were concluded with insurance companies and respectively no payment followed from their side. In the conditions of an increased number of insurance subscribers volume of work to be paid keeps increasing too.

Conclusion:

> In 2012 inclusion of insurance companies in the state program of Ambulance Medical Service of Tbilisi led to the saving of 1,420,000 GEL. In addition, number of insured people is rising year after year. Insurance packages of corporate and individual subscribers include ambulance care, while majority of people still call LEPL 112, which sends out ambulance brigades only within the state funded program. It increases the public spending.

Recommendation:

> It is important to revisit the rules of ambulance care program financing to avoid the duplication of costs incurred on ambulance care and private payments of subscribers under their own insurance schemes.

33 Some insurance companies failed to separate insurance subscribers by the place of residence. These data also contain data of the Ministry of Interior and State Security Service, which are not separated by the place of residence for confidentiality reasons.

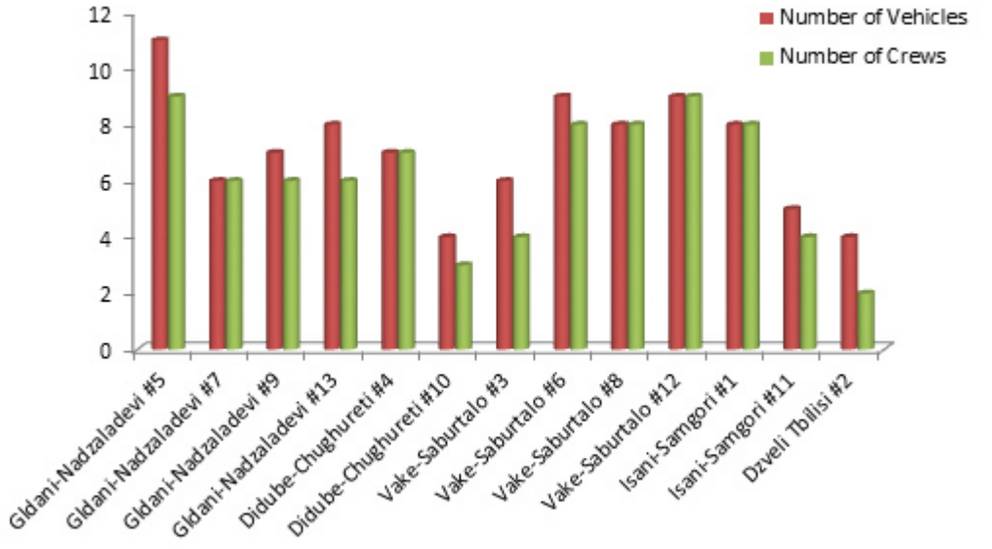
9. Utilisation of the Material-Technical Base

9.1 Utilization of the Material-Technical Base of Ambulance Medical Service in Tbilisi

As of October 2013 Tbilisi population is served by 92 ambulance vehicles in any given day – 80 vehicles during the daytime and additional 12 vehicles in peak hours – from 7:00 p.m. Referred vehicles are distributed among branches in different districts of Tbilisi.

Chart below presents the distribution of ambulance vehicles among different branches.

Chart 9.1.1: Distribution of Vehicles among Branches of Ambulance Care in Tbilisi (As of October 2013)



Red column symbolizes the number of vehicles, while the green column – number of brigades; Branches: Gldani-Nadzaladevi N5, Gldani-Nadzaladevi N7, Gldani-Nadzaladevi N9, Gldani-Nadzaladevi N13, Didube-Chughureti N4, Didube-Chughureti N10, Vake-Saburtalo N3, Vake-Saburtalo N6, Vake-Saburtalo N8, Vake-Saburtalo N12, Isani-Samgori N1, Isani-Samgori N11, Old Tbilisi N2.

As presented in the above chart, number of brigades and vehicles is proportionate. 80 vehicles are distributed in a stable manner among various branches, while 12 vehicles are added in high workload periods.

Prior to 2013, there were 45 minivans and 45 light vehicles serving Tbilisi. The latter type of vehicles was used for non-emergency cases.

According to the current international practice and by taking into account the priorities, different types of vehicles are considered for different categories of incidents (reanomobils, specifically equipped emergency rescue vehicles, mobile ambulance vehicles). Widely practiced approach in different cities of the world include the use of specifically equipped minibuses, reanomobils and light vehicles when the health condition of patients is not emergency and ambulance brigades only deliver consultations or stabilize the condition. Such vehicles are of great value within the city and ensure the timely response.

According to the best practice[34] developed by the US Ambulance Care Association, by taking into account the major criteria of efficient outcome of ambulance care and for the achievement of productive results of the emergency rescue, it is most important to make the response time reliable and maintain the cost-efficiency principle, inter alia in the procurement of the vehicle pool.

Correct selection of the type of vehicle by the dispatch unit by adequate assessment of the situation and sound operation of the priority system may be materialized.

For the full upgrade of the vehicle pool, by considering the old age and technical condition of vehicles, Municipality of Tbilisi announced an electronic tender on February 2, 2013 for the procurement of 80 vehicles. Winner of the tender offered the Municipality 80 vehicles of FIAT DUCATO with a total value of 3,610,000 GEL (unit price - 45,125 GEL). This amount includes warranty on vehicles, their main complications and provision of the applicable medical equipment.
It is worth noting that Municipality of Tbilisi also procured 45 light vehicles (KIA Picanto) to fully upgrade the ambulance vehicle pool with the specifically equipped minibuses. At the same time, full upgrade was made without any justified analysis.

By taking into account the current priorities of the system, whereby 26% of total calls for ambulance is of low priority, 19% - of medium priority non-emergency cases (in total 45%), procurement of light vehicles did not follow the respective proportions. It is especially true when the hospitalization cases amount only to 13-15% of the total number of calls for ambulance in Tbilisi in any given year, which require specifically equipped minibuses. In addition, well defined incidence types (priorities) lead to the minimum demand on hospitalization after the response with a light vehicle and respectively on additionally equipped vehicles.

Prior to the procurement of vehicles in 2013, out of 80 ambulance vehicles over one half of it – 45 vehicles were light.
Audit has identified that calls for ambulance with low and medium priorities, which as a rule do not lead to the hospitalization, amount to 45% on average.

Despite the fact and by taking into account the annually decreasing percentage indicators of incidents with low priority in a long run, audit team made a conservative calculation justifying the procurement of 35 vehicles (38% of the vehicle pool) rather than 45 light vehicles leading to the public spending from the Budget, especially when 13% of total calls for ambulance is the indicator of hospitalization.

As a result of the aforesaid, it could have been possible to save 950,000 GEL on the procurement, thus making another saving of 220,000 GEL on the fuel within one year only, saying nothing on the savings on the maintenance after the warrantee period.

Apart from the abovementioned uncost-efficient expenses, Emergency Rescue Centre Ltd procured planchet computers through a simplified method on December 12, 2012 in the value of 105,300 GEL. It was aimed at ensuring the access of medical doctors with various data and introduction of a system of electronic cards. Ultimately, it could enable them to select the freely available beds at health facilities while transporting the ambulance patients to hospitals. Doctors were specifically trained in the application of planchets, though they have not been used so far and system has not been launched, as the computers are wifi operated. Cable-free internet is only available in certain districts of Tbilisi. Respectively, costs incurred are also inefficient as these resources could not be used for the achievement of aims and goals set for the program.

Conclusion:

- Considering all the aforesaid, in majority of cases program implementing organizations in Tbilisi do not plan their operation with principles of economy and effectiveness, thus leading to inefficient spending of public funds.

Recommendation:

- It is important that Emergency Rescue Centre Ltd of Tbilisi Municipality spends financial resources on its material-technical means in line with its strategic plan, priorities, sound planning and analysis of the actions to be implemented, in full compliance with the principle of economy thus leading to the efficiency of services rendered.

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9.2 Utilization of Material-Technical Means in the Regions of Georgia

Under the Presidential Order issued in 2011, state owned property, including the movable property – vehicles were transferred to clinics operating under the ownership of insurance companies. From September 1, 2012 insurance companies ensure the co-financing of ambulance medical services delivered within their coverage (insurance) area in the regions of the country within the monthly limit of 25% set for 2012 and within 50% - in 2013.

Despite the fact that program is implemented by the MOLHSA, it does not regularly monitor or follow up on the timely delivery of ambulance medical services to patients, priorities, quality, utilization of vehicle pool and material-technical base. As it becomes clear from the information shared by the MOLHSA, 75 calls for ambulance were declined by the emergency service in Zugdidi Region in August of the current year (within 2 days only) for the vehicle malfunction. With clarifications given by the MOLHSA, it is a systemic problem and applies to all the regions of the country.

Several companies operating in the same region create problems in movements between the municipalities. Inventarisation of vehicles held by ambulance medical services carried out by the Disaster Coordination and Regime Department of MOLHSA has identified that total number of vehicles is 283. Table below presents the current condition of vehicles.

Table 9.2.1: Assessment of Technical Condition of Vehicles as a Result of the MOLHSA Inventorisation

Vehicle Assessment	Quantity
Good Condition	48
Medium Condition	44
Bad Condition	159
Amortized	32

As we see from the above Table, majority of vehicles are technically broken. It means that calls for ambulance are often declined or there are cases of late arrival at the destination, as a result of which ambulance brigades of other municipalities have to respond on calls for ambulance in some cases.

Along with the malfunction of the vehicles, as MOLHSA explains, it lost the quality control leverages in the regions of the country when the program implementation was initiated by insurance companies. MOLHSA does not have respective regulations to prevent no-response cases on calls for ambulance.

In addition, LEPL 112 does not dispatch ambulance care in the regions of the country. Respectively, information on priorities, follow-up, arrival at the destination, delays and other factors is not electronically accessible. Respectively, within the available resources it is impossible to collect and analyze information or to identify the trends.

Global Positioning System (GPS) is not introduced in the regions of the country. Neither are the alternative communication mechanisms. As there are no efficient liaison systems with the regions, LEPL 112 finds it hard to pass on the alerts or to monitor the performance.

It is worth noting that major changes are made in the MOLHSA to the ambulance medical service reform. Emergency Rescue Centre LEPL was established under the MOLHSA. It is not planned to upgrade the ambulance vehicles and introduce the quality assurance system.

Conclusion:

> In the period of audit, neither MOLHSA nor LEPL 112 had essential instruments to ensure the timely response on calls for ambulance in the regions of the country or to achieve the satisfactory quality of service.

Recommendation:

> With an aim of improving the complexities existing in the regions of the country it is essential that MOLHSA develops a Strategic Development Plan of the Ambulance Care in the regions of the country. It should cover the timely response, priority setting and quality control mechanisms and leverages to facilitate the efficient delivery of ambulance care.

10. Summary Conclusions and Recommendations

Substantial changes have been made to the ambulance care in the recent period. Past and current activities, as well as resources spent on the ambulance care by the state, accessibility of ambulance care in the healthcare system and improvement of service quality once again proves the high priority of the topic.

Despite the aforesaid, there still are some problems and impediments in the introduction of program planning and funding to reduce the number of unjustified calls for ambulance, to streamline the priority setting system, territorial distribution of ambulance brigades and productive use of the available financial resources. Also, major features of the ambulance care in the country are not in fully compliance with the best international practice or standards. Namely:

- There is no nation-wide dispatch system introduced in the country based on the best international practice and standards. Number of low priority calls for ambulance is high, similar to the response time on the critical conditions. Auditee fails to carry out a systemic analysis of the data, to identify the trends, to ensure and control uninterrupted efficient response, per-minute monitoring and quality improvements.
- In about 25% of municipalities the correlation is over 20 000 people per ambulance brigade, which leads to the increased workload of such municipalities when in other municipalities one ambulance brigade would be serving the needs of much smaller size of population. Optimal distance is not taken into account in delivering the ambulance medical services in regions. It thus leads to the prolonged response time on the calls for ambulance.
- Number of vehicles increases in Tbilisi along with the increased number of ambulance brigades. Respectively, additional transportation means are purchased thus associated with substantial expenses.
- Trainings held for the medical doctors of ambulance care are not regular and not every doctor is involved. Level of trainings differs in Tbilisi and in regions. Training material is also different for doctors. System is not standardized throughout the country. No protocols and standards have been introduced for medical care in the country.
- Principle of patient hospitalisation to the nearest healthcare facility is violated. At the same time, cases of patient rejection by hospitals are rather high in numbers. It may have a significant impact on the health condition of individual patients and increase the lethal outcome indicators.
- One of the factors of the increased number of calls for ambulance in Georgia is the affordability of emergency care, increased quality of service and public trust. Negative factors include the unsatisfactory condition of primary healthcare, low public awareness on the affordability of certain healthcare services in the country; Another factor is the lack of Hear and Treat consultancy services.
- Ambulance medical service delivered by the Municipality of Tbilisi in the capital city is funded from the budget by the principle of unit price of individual cases, which amounted to 40 GEL in the period of audit. Under the tender agreement concluded by Ambulance Medical Assistance Centre Ltd with the Municipality of Tbilisi, reports were submitted by electronic mail to the commissioning organization (city administration) at the end of every month in 2012 with information on the past performance (number of phone calls and follow-up visits, with an indication of personal data of served patients). On the grounds of this information funds were transferred to the bank account of the Centre, calculated at the rate of 40 GEL per patient. As for the insured patients, from 2012 services rendered to insured patients were indicated separately in the reports, along with the identity of such insurance companies. In such cases compensations were requested from the respective insurance companies. In 2012 work delivered by insurance companies amounted to 1,420,000 GEL. No agreements were concluded with insurance companies in 2013. Hence, this program is financed solely from the State Budget.
- Program implementing organizations in Tbilisi do not plan their procurements (of material technical base: vehicles, computer hardware) with principles of economy and effectiveness, thus leading to inefficient spending of public funds.
- In the period of audit, neither MOLHSA nor LEPL 112 had essential instruments (regulations, technical base, monitoring and quality control mechanisms) to ensure the timely response on calls for ambulance in the regions of the country or to achieve the satisfactory quality of service.

Recommendations:

For the Ministry of Labor, Health and Social Assistance; LEPL 112; Municipality of Tbilisi and its Emergency Rescue Centre Ltd:

- With coordination of the Ministry of Labor, Health and Social Affairs it is important to develop the ambulance dispatch protocols together with LEPL 112. Ambulance dispatch program based on such protocols should be introduced in the system of LEPL 112 with an applicable response time per incidence types. It is important to develop the quality assurance mechanisms by priorities and abolish unreasonable late or no arrival in response to the calls for ambulance medical service.
- As a result of the analysis of ambulance calls and degrees of priority, it is possible to identify the no-emergency nosologies in the adequate age groups, which are in high demand. In such cases different mechanisms should be enforced with coordination of MOLHSA to make sure that ambulance medical service is less used as a portable general practitioner (GP) in the country.
- It is important that MOLHSA, program implementing organizations in coordination with LEPL 112 acting as a recipient of calls for ambulance, introduces the alternative consultation means to reduce the number of irrelevant calls (follow-up visit by an ambulance brigade) and respective expenses.
- It is important that LEPL 112, together with MOLHSA, Municipality of Tbilisi and other applicable organizations cares about the increased public awareness to reduce the number of irrelevant calls for ambulance by applying various educational, advertising and informative instruments so that untargeted calls get identified and reduced.
- MOLHSA should ensure the accreditation of training programs, standardization of protocols/guidelines for the entire country and by taking into account the international standards and best practices. It is also important that MOLHSA standardizes the qualification indicators, mandatory training programs and their periods in cooperation with Emergency Rescue Centre and in line with the models of ambulance care. It will facilitate the establishment of the ambulance medical service model in Georgia and will also improve the quality of service delivered to patients.
- It is important that MOLHSA ensures the availability of a single scheme of hospitalization for the entire country, along with its use by ambulance medical service brigades and other implementing organizations of the program. It will simplify the management and organization of the process of hospitalization. MOLHSA should also ensure the review the cases of ambulance patients declined by healthcare facilities. They should study the reasons and avoid similar cases from happening by following up on them. It is essential to ensure the hospitalization of ambulance patients to the closest healthcare facilities to avoid the deterioration of their health conditions.
- It is important that Emergency Rescue Centre Ltd of Tbilisi Municipality spends financial resources on its material-technical means in line with its strategic plan, priorities, sound planning and analysis of the actions to be implemented, in full compliance with the principle of economy thus leading to the efficiency of services rendered.
- It is important for the program implementing organizations (MOLHSA, Municipality of Tbilisi) to revisit the rules of ambulance care program financing to avoid the duplication of costs incurred on ambulance care and private payments of subscribers under their own insurance schemes.

Ministry of Labor, Health and Social Assistance (MOLHSA)

- It is important that MOLHSA uses all the available leverages to increase the role of primary healthcare and reduce the number of non-emergency calls for ambulance, along with the associated expenses.
- It is essential that the MOLHSA ensures the optimal distribution of brigades and proportionate funding by municipalities also by taking into account the size of population and geographic principles, demand on ambulance medical services and other important causing factors by putting exceptions aside.
- It is essential for the MOLHSA to ensure the follow-up on calls for ambulance with a principle of an optimal time to make sure that efficient response is made in emergency cases.
- It is essential that the MOLHSA revisits the rules of funding to ensure the optimal distribution of brigades and proportionate funding by municipalities also by taking into account the principles of efficiency, effectiveness and economy, so that public gets timely ambulance medical service.

- MOLHSA should ensure the accreditation of training programs, standardization of protocols/guidelines for the entire country and by taking into account the international standards and best practices.
- It is important that MOLHSA ensures the availability of a single scheme of hospitalization for the entire country, along with its use by ambulance medical service brigades and other implementing organizations of the program. It will simplify the management and organization of the process of hospitalization. MOLHSA should also ensure the review the cases of ambulance patients declined by healthcare facilities. They should study the reasons and avoid similar cases from happening by following up on them. It is essential to ensure the hospitalization of ambulance patients to the closest healthcare facilities to avoid the deterioration of their health conditions.
- With an aim of improving the complexities existing in the regions of the country it is essential that MOLHSA develops a Strategic Development Plan of the Ambulance Care in the regions of the country. It should cover the timely response, priority setting and quality control mechanisms and leverages to facilitate the efficient delivery of ambulance care.

Municipality of Tbilisi

- It is important that Municipality of Tbilisi considers the use of alternative means (licensed private ambulance medical services) at times of high work-load of ambulance brigades to ensure the cost-efficiency of its expenses. Procurement and maintenance of vehicles is associated with substantial expenses. Hence, program implementing organizations should carry out an accurate analysis (by comparing the use of alternative means with operation and capital expenses to be made on the procurement of additional vehicles and creation of brigades) to identify the opportunities of saving budget resources of the program.

LEPL 112

- It is essential that LEPL 112 launches the respective statistical application of the software, which ensures the data capturing on response time, along with other data that may serve useful to other actors of the system as an uninterrupted source of information for further monitoring and assessment.

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