

Performance Audit

**Department of Public Safety  
BUREAU  
Of  
EMERGENCY MEDICAL  
SERVICES**

Report by the  
Office of City Controller

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June 2008



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June 5, 2008

To the Honorable: Mayor Luke Ravenstahl  
and Members of Pittsburgh City Council:

The Office of City Controller is pleased to present this performance audit of the *Department of Public Safety Bureau of Emergency Medical Services* conducted pursuant to the Controller's powers under Section 404(c) of the Pittsburgh Home Rule Charter.

### **EXECUTIVE SUMMARY**

The City's Bureau of Emergency Services (EMS) is made up of three divisions: the Ambulance Division, Rescue Division and Training Division. All division paramedics are certified in basic life support (BLS) and Advanced Life Support (ALS) through the Pennsylvania Department of Health Bureau of Emergency Medical Services. City EMS must comply with Pennsylvania Code and State Department of Health requirements and protocols. One statutory requirement is oversight by a qualified ALS Service Medical Director. Pittsburgh EMS contracts with the Center for Emergency Medicine of Western Pennsylvania for medical direction services and with QuickMed Claims for billing and collection services.

This audit focuses on EMS' Ambulance Division, the Bureau's largest and primary division. The Ambulance Division provides pre-hospital emergency medical care and hospital transport to any sick or injured person in the City limits. City ambulances are dispatched through the joint City-County Emergency Operations Center (EOC) through a Computer Aided Dispatch (CAD) system. This audit assesses EMS response time, ambulance usage ratio and contract compliance for billing and medical direction services.

### **Findings and Recommendations**

Two key performance measures of EMS effectiveness are Response Time and Unit Hour Utilization (UHU) rates. Response time focuses on the timeliness of EMS

arrival at the scene of a medical emergency. UHU measures ambulance usage during a given period.

### Response Time Effectiveness

The response time standard that most EMS providers aspire to, including the City of Pittsburgh, is 8 minutes 59 seconds or less on 90% of priority call runs. Excessive demand on ambulance units negatively impacts ambulance response time. Other factors that can increase response time include weather, road closures, time of day, topography, street patterns and traffic density.

**Finding:** EMS report data indicates that the average response time for all calls meets the national standard of 8 minutes 59 second or less. However, the auditors' priority call distribution analysis indicates that less than two thirds (64.5%) of priority call runs in 2006 met the national standard of 8 minutes 59 seconds or less.

**Finding:** City EMS priority call response time worsened in 2007. Only 60.37% of priority calls arrived on scene under 9 minutes.

**Recommendation:** EMS Administration should identify the factors that hamper paramedic response time and determine which factors the Bureau can control. For example, if excessive demand is a primary factor, EMS Administration should try to address demand by having more ambulance units available during peak usage periods.

**Recommendation:** In addition to average response time, EMS should calculate frequency of response times as a better indicator of performance and efficiency.

### Unit Hour Utilization Effectiveness

Acceptable target UHU ratios range from 0.33 to 0.50. A UHU in this range theoretically allows ambulance crews time to return to the station, re-fuel, sanitize the ambulance if needed, restock, wash-up, eat, and rest. The auditors assessed Pittsburgh EMS against a range average 0.42 target and against the maximum acceptable target of 0.50.

**Finding:** In the last two years, City EMS ambulance units have been overworked, with overall UHU exceeding the auditors' target level of 0.42 UHU and the high end acceptable target level of 0.50 UHU. In 2006, overall EMS ambulance fleet UHU was 0.54 and in 2007 overall UHU was 0.56.

**Finding:** In 2006, individual ambulance unit UHU deviations from the high end 0.50 standard were worse than the overall ratio. The UHU ratio for 11 of the City's 13 ambulance units ranged from 0.51 to 0.62.

**Finding:** In 2007, the entire EMS ambulance fleet (100%) was operating over the auditors' UHU target ratio of 0.42. Eighty-five percent (85%) of these ambulances

exceeded the high end acceptable UHU ratio of 0.50. The UHU ratio for 10 of the City's 13 ambulances ranged from 0.51 to 0.64.

Unit Hour Utilization is a direct function of the number of call runs in a given time period. To prevent overload, the recommended range of calls per year is 2500 to 3000 per ambulance.

**Finding:** The demand on some City EMS units is excessive. In 2007, twelve of the City's 13 ambulances workload greatly exceeded the recommended range of 2,500 to 3,000 runs. In 2007, City EMS averaged 4,904 call runs with a high of 5,588 runs for Medic 5114.

#### Ambulance Dispatch Analysis

**Finding:** In 2006, on average 50% of the time EMS units were dispatched outside of their district as often as they were dispatched within their own district. Medic 5109, stationed in Shadyside, was dispatched out of district 70% of the time. Medic 5112, stationed in Lincoln Place, was dispatched out of district 68% of the time.

**Finding:** In 2007, EMS units were dispatched more often outside their districts, 54% of the time, than they were dispatched within their districts, 46%. Again, Medic 5109 and Medic 5112 were dispatched out of district the highest number of times. Joining them in high out of district dispatch volume is Medic 5102, located in the Brookline area.

**Finding:** Excessive out of district dispatch is another indicator that the current EMS fleet is overburdened. This further supports the need for adding more ambulances to service the Pittsburgh area. In both 2006 and 2007, units 5114, 5104 and 5105 had the most calls and units 5112 and 5110 had the least.

#### EMS Call Volume Analysis

**Finding:** The peak hours for EMS calls are between 10 a.m. and 6 p.m. This time frame overlaps two shifts: the 7 a.m. to 3 p.m. shift and the 3 p.m. to 7 p.m. shift. These are the shifts with 13 ambulances in service. The night shift, with the lowest call volume, has 10 ambulances available.

**Recommendation:** To reduce EMS' overall and individual ambulance UHU ratios, the City must reduce individual ambulance usage (the number of runs per ambulance). The only way to reduce ambulance run load is to have more ambulances in service.

#### Reducing Ambulance Usage and Overtime Costs

EMS Administration anticipates hiring 8 more paramedics by May. These eight new hires would bring EMS up to current budgeted staffing levels but would not help compensate the Bureau's loss of 4 Emergency Medical Technician (EMT) units in 2003.

**Finding:** Reducing the Bureau's UHU will require an increase in budgeted positions to hire more paramedics. The Bureau must hire three paramedics to staff one ambulance shift. The third paramedic provides cover for call offs, vacation and personal time.

**Recommendation:** City and EMS Bureau Administration should study the feasibility of adding 6-12 more paramedic positions in budget year 2009. EMS Administration could add two ambulances (6 paramedics) to its two busiest shifts, the 7-3 and 3-11 shifts. This would increase average ambulance availability from 12 to 13.3 ambulances per day and would reduce EMS' overall UHU to the highest acceptable ratio of 0.50.

**Recommendation:** Alternatively, EMS Administration should consider creating a hybrid shift based on historic call volume. Three ambulances could staff the centralized districts of 04, 05 and 14 between the hours of 10am-6pm. The other ambulance unit could be added to district 11 to alleviate that district's overworked paramedics. A total of four units (12 paramedics) would allow a safe operating condition for the current overworked ambulance units.

**Finding:** Reducing ambulance usage by adding more ambulances would not only reduce the Bureau's UHU ratio but theoretically could also decrease overtime costs. An expanded paramedic corps would result in a larger pool of paramedics to deploy when shift vacancies occur.

**Finding:** The Bureau has 10 extra ambulances for accidents and other needed responses and will be acquiring 5 more ambulances this year. EMS anticipates no net fleet gain because it plans to replace 5 current reserve ambulances with the new vehicles.

**Recommendation:** EMS Administration should determine if any of these new ambulances could be used for additional ambulance crews rather than used to replace reserve vehicles. This would reduce the cost of equipping additional ambulance crews.

#### Medical Direction Services Invoicing Compliance

**Finding:** The Center for Emergency Medicine is not being paid in accordance with contract requirements. The CEM is not submitting itemized invoices as required by its contract with the City.

**Recommendation:** To comply with contract payment requirements, EMS should ask for an itemized statement of services as agreed to by all parties to the contract. In the alternative, the contract should be amended to an agreed monthly payment that does not require an itemized invoice.

Billing Contract Compliance


**Finding:** According to EMS Administration, QuickMed Claims(QMC), at the direction of EMS, is not complying with the contract requirement to bill City residents. The contract clearly states "QMC has been informed that, pursuant to the Act 47 Plan approved by City Council, CITY will begin directly billing residents. The terms of this Agreement shall apply to the billing of residents and non-residents alike."

**Recommendation:** If the City is not interested in collecting ambulance bill balances from City residents, the language about 'directly billing residents' should be deleted from the contract.

The City's Emergency Medical Services Bureau provides professional pre-hospital emergency medical care and hospital transport services to Pittsburgh's citizens and visitors. If the Ambulance Division had more ambulances in service, individual ambulance usage and response times would decrease. Improved response time would benefit the public and less demand on overworked ambulance units would benefit the paramedics who provide needed emergency medical care.

We are pleased that Bureau of Emergency Medical Services administration concurs with many of our findings and recommendations.

Sincerely,

  
Michael E. Lamb  
City Controller

## INTRODUCTION

This performance audit of the Department of Public Safety Bureau of Emergency Medical Services (EMS) was conducted pursuant to the Controller's powers under Section 404(c) of the Pittsburgh Home Rule Charter. This is the Controller's first performance audit of EMS. The audit focuses on EMS' Ambulance Division, the Bureau's largest and primary division. Generally accepted governmental auditing standards (GAGAS) were followed.

## OVERVIEW

The City's Emergency Medical Services was started in 1975 through a federal Comprehensive Employment and Training Act (CETA) grant program to provide emergency medical care and hospital transport services. Today's EMS Bureau is made up of three divisions: the Ambulance Division, Rescue Division and Training Division. These divisions provide a number of various services to City residents, businesses, educational institutions, cultural organizations, sporting events and all other special events.

### Divisions

The Ambulance Division provides pre-hospital emergency medical care and hospital transport to any sick or injured person in the City limits. These division paramedics also provide medical coverage for the numerous sporting and other special events held in the City throughout the year. All division paramedics are certified through the Pennsylvania Department of Health EMS bureau in basic life support (BLS) and Advanced Life Support (ALS).

The Rescue Division provides medically directed rescue services including hazardous material and river rescue situations. In addition to two heavy duty rescue trucks, this division has other specialized vehicles such as river rescue units, a hazardous materials response truck, a structural collapse response truck and a mass casualty response truck.

The Training Division consists of three Paramedic Crew Chief training officers who oversee compliance with paramedic annual 24 hour continuing education class requirements. The Training Division also provides education opportunities in areas such as automatic external defibrillator use to other City personnel and to the public at large. In addition, other field personnel with specialized training are brought into the Division as needed to assist in training subjects that are not part of everyday, routine operations. This division also teaches the First Responder program for City Bureau of Fire officers and recruits.

## Organizational Chart

Pittsburgh's Bureau of EMS is governed by one Chief, one Deputy Chief, an Assistant Chief, two Division Chiefs, and ten District Chiefs. The bureau has three clerical staff, one patient care coordinator, two laborers, 53 crew chiefs and 109 paramedics. Eighty-seven of the paramedics are classified as fifth year paramedics, the City's highest paramedic classification.

The City is divided into thirteen EMS districts, numbered 1 through 14. (There is no district 13.) Each district has one EMS station and one ambulance. A district and station map appears in the Appendix. Two person crews provide ambulance service around the clock, covering three work shifts: 7 a.m. to 3 p.m., 3 p.m. to 11 p.m. and 11 p.m. to 7 a.m.

## Bureau Compliance Requirements

Pittsburgh's EMS must comply with Pennsylvania Code and State Department of Health Bureau of Emergency Medical Services requirements and protocols. The Bureau is responsible for the statewide development and coordination of a comprehensive EMS system. The Bureau licenses all ambulance services and credentials all pre-hospital care providers in the Commonwealth.

## Medical Director

One of the statutory requirements for Bureau of EMS licensing is oversight by a qualified ALS Service Medical Director. State statute (28 Pa. Code 1003.5) defines the role and responsibilities of an ALS Service Medical Director. The primary role of the Medical Director is to provide guidance and advice to the ALS ambulance service. This includes ensuring paramedics are familiar with statewide medical treatment protocols and protocols for the storage and usage of drugs. The Pittsburgh EMS Bureau contracts with the Center for Emergency Medicine of Western Pennsylvania for medical direction services.



## **911 Combined City-County Emergency Operations Center (EOC)**

On January 1, 2005, the City's 911 Center merged with Allegheny County's 911 Center. This combined Emergency Operations Center (EOC) is located in City's East End and is responsible for receiving, processing and dispatching all 911 emergency calls in Allegheny County. All former City 911 employees were transferred to the amalgamated City-County 911 Center where they continue to dispatch the City portion of 911 emergency calls.

The 911 call center is divided into four zones according to geographical regions of Allegheny County using the three rivers as the determining line: North, South, East and Central. The Central Zone includes all City of Pittsburgh neighborhoods and Mt. Oliver. The Central Zone employs 63 people that work in three 8-hour shifts with 3-8 people per shift.

When an emergency call comes into the Center, the operator answers the call by asking the caller to identify which city, township, or borough they are calling about so they can direct their call to the corresponding zone for dispatching the appropriate help. The Center uses a computerized Medical Priority Dispatch System based on internationally accepted Standard Operating Guidelines or SOGs. The system assigns medical priority to each call after the caller answers a number of questions that automatically appear on the operator's computer screen. Based on the caller's answers, the computer assigns the call a nature code and priority number.

These computer generated coding protocols are based on guidelines set by the City's Medical Director, EMS and Fire Bureau. There are four priority rankings for medical emergencies: E0, E1, E2 or E3. E0's are the highest priority and are considered life threatening in nature. The priority number determines if First Responders are sent. First Responders are City firemen who are trained in basic CPR and defibrillator usage and are dispatched to the majority of E0 calls.

The EOC currently uses two versions of Computer Aided Dispatch (CAD) systems. The City or Central zone uses a 1999 version and the County uses a newer 2001 version. However, by the end of 2008, management hopes to incorporate a new, unified CAD system for both the City and County. In addition, a new mapping or Global Positioning System (GPS) will provide improved location identifiers for the easiest and fastest routes to access the location of the caller. The GPS tracking system will allow dispatchers to locate the closest available ambulance unit for dispatch.

For quality assurance purposes, the 911 center staffs 1 Pittsburgh paramedic and 2 fire specialists who are available to aid in any emergency call as needed. All fire calls are directed to these two fire specialists who are trained to coordinate all appropriate emergency services needed until the fire is under control.

In March, the 911 Center obtained a new tracking device for cell phone callers. This device allows 911 dispatchers to identify the cell phone caller's telephone number and his or her physical location. The previous system was unable to identify cell phone call numbers or location of the call. Previously, 911 dispatchers had to ask cell phone callers more questions to identify their location, slowing down the dispatch process. EOC personnel stated that forty percent (40%) of all calls to 911 are made from cell phones. This new tracking device should result in more timely ambulance and other emergency vehicle dispatch.

## **SCOPE**

Audit scope is limited to City's 2006 and 2007 EMS dispatch data, EMS bureaus current contracts with the Center for Emergency Medicine for Western PA and QuickMed Claims.

## **OBJECTIVES**

1. To determine if City paramedic response time is meeting national response time guidelines.
2. To determine if City EMS Unit Hour Utilization rates are within nationally acceptable ranges of ambulance usage.
3. To assess Unit Hour Utilization output by EMS district.
4. To assess the cost effectiveness of the contract with the Center for Emergency Medicine.
5. To assess Emergency Medical Technicians (EMT) loss on Bureau effectiveness.
6. To assess the cost effectiveness of contracted billing for ambulance service.
7. To make recommendations for improvement.

## **METHODOLOGY**

The auditors interviewed Pittsburgh's EMS Chief, Deputy Chief, Allegheny County's Department of Emergency Services Enhanced 911 Communications Manager, the Chief of the Department of Emergency Services for Allegheny County and the EMS computer analyst.

Internet research on EMS protocols and governing laws and agencies was conducted. Information was obtained from the City's website and from EMS administration. The Controller's in-house research files were also reviewed. The auditors reviewed recent audits of the Detroit and Philadelphia Emergency Medical Services.

A walkthrough of the consolidated City-County 911 Emergency Operation Center was performed, observing emergency dispatch operations.

EMS administration provided CAD for 2006 and 2007 in excel spreadsheet format. Data fields included Case Number, Entry Date (or date of call), Call type, Priority Code, EMS District, Incident Location, Unit Dispatched, Entry Time, Dispatched Time, On Scene Arrival Time and Close Time (or time ambulance unit is back in service). The auditors analyzed the data to determine the following: average and frequency of priority call response times and total call response times, unit hour utilization rates, frequency of out of zone dispatch and call frequency per shift.

The Bureau's contract with the Western Pennsylvania Center for Emergency Medicine was examined for compliance with scope of services and payment requirements. The auditors reviewed a third party audit of QuickMed Claims, EMS' billing contractor.

## FINDINGS AND RECOMMENDATIONS

Two key performance measures of EMS effectiveness are Response Time and Unit Hour Utilization (UHU) rates. Response time focuses on the timeliness of EMS arrival at the scene of a medical emergency and is measured from time of dispatch to time of on scene arrival. UHU measures ambulance usage during a given period. UHUs can be calculated by week, month, season, year or any other time period.

### Response Time Effectiveness

There are no federal or state response time standards for ambulances. Instead, according to EMSresponder.com, response time measures seem to be governed by “consensus standards” that set generally accepted performance standards to meet safety requirements. Compliance with these consensus standards is voluntary, but deviation from the standards could impact agency liability. Because deviation from a standard of care is a prime element of negligence cases, the website recommends that EMS providers abide by these standards. The response time standard that most EMS providers aspire to, including the City of Pittsburgh, is 8 minutes 59 seconds or less on 90% of priority call runs.

This standard is based on the window for effective cardiac arrest intervention. Most priority code calls involve cardiac arrests and responding quickly is one of the most important and challenging jobs for EMS agencies. Early defibrillation and Cardio Pulmonary Resuscitation (CPR) are factors that improve survival in cardiac arrests. According to the above mentioned website, the majority of adults in cardiac arrest can be saved when early defibrillation and Advanced Life Support (ALS) intervention occurs, ideally within 4-6 minutes. Studies show that resuscitation attempts after 10 minutes are less successful.

In Pittsburgh during the early 1980’s, the First Responder program was established to provide early defibrillation. The City has 29 firehouses, manned round the clock. Personnel from the firehouses can respond within minutes to a cardiac alert in their area and start Basic Life Support (BLS) defibrillation until the paramedics arrive. In contrast, 13 ambulances service the entire City from 7 a.m. to 11 p.m. and 10 ambulances are available 11 p.m. to 7 p.m. Whether the First Responder program is the most cost effective method to supply BLS defibrillation is beyond the scope of this audit.

### EMS 911 Response Data

EMS Citistat reports for 2006 and 2007 provides monthly average call response times, average priority call response times, percent of priority call responses under 8.59 minutes and average Unit Hour Utilization. The report response time averages are not presented as minutes and seconds, but as minutes and percent of minutes. The auditors converted the EMS data to minutes and seconds to be consistent with CAD report data.

The Citistat report indicates that the average response time for all calls meets the national standard of 8 minutes 59 second or less. EMS' 2006 data shows an average response time of 8.51 minutes (8 minutes 30 seconds) for all calls and an average response time of 7.78 minutes (7 minutes 48 seconds) for priority calls. EMS' 2007 data shows an average response time of 8.9 minutes (8 minutes 54 seconds) for all calls and an average response time of 8.19 minutes (8 minutes 12 seconds) for priority calls.

#### Response Time Frequency Distribution

The auditors performed a frequency distribution analysis of the priority (E0s) 911 calls using CAD data for the years 2006 & 2007. A frequency distribution shows the range of response times as opposed to the average, giving a more realistic way to assess performance. "Null" entries (call was cancelled or called off) and entries with bad data (arrive time was earlier than dispatch time) were eliminated from this analysis. These eliminated entries represent 16.9% of the 2006 priority runs and 18.5% of the 2007 priority runs. Tables one and two show the frequency range of response times for priority calls for 2006 and 2007.

**Finding:** City EMS is not meeting the national standard of 8 minutes 59 seconds or less on 90% of its priority call runs. As the chart below illustrates, in 2006, 64.5% of priority call runs met the national standard of 8 minutes 59 seconds or less.

**Finding:** Priority call response time has worsened. In 2007, only 60.37% of priority calls arrived on scene under 9 minutes.

**TABLE ONE**  
**2006 FREQUENCY DISTRIBUTION**  
**OF PRIORITY CALL RESPONSE TIMES (E0s)**

<b>MINUTE RANGE</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENTAGE</b>	<b>CUMULATIVE PERCENTAGE</b>
<b>&lt;=8:59 IS THE STANDARD</b>	11,604	64.53%	64.53%
<b>9:00-9:59</b>	1,407	7.82%	72.36%
<b>10:00-10:59</b>	1,116	6.21%	78.57%
<b>11:00-11:59</b>	874	4.86%	83.43%
<b>12:00-12:59</b>	661	3.68%	87.10%
<b>13:00-13:59</b>	499	2.78%	89.88%
<b>14:00-14:59</b>	375	2.09%	91.96%
<b>15:00-15:59</b>	287	1.60%	93.56%
<b>16:00-16:59</b>	215	1.20%	94.76%
<b>17:00-17:59</b>	125	0.70%	95.45%
<b>18:00-18:59</b>	133	0.74%	96.19%
<b>19:00-19:59</b>	98	0.55%	96.74%
<b>20:00-20:59</b>	82	0.46%	97.19%
<b>21:00-21:59</b>	70	0.39%	97.58%
<b>22:00-22:59</b>	48	0.27%	97.85%
<b>23:00-23:59</b>	53	0.29%	98.14%
<b>24:00-24:59</b>	31	0.17%	98.31%
<b>25:00-25:59</b>	32	0.18%	98.49%
<b>26:00-26:59</b>	30	0.17%	98.66%
<b>27:00-27:59</b>	22	0.12%	98.78%
<b>28:00-28:59</b>	21	0.12%	98.90%
<b>29:00-29:59</b>	30	0.17%	99.07%
<b>30:00-44:59</b>	124	0.69%	99.76%
<b>45:00-59:59</b>	24	0.13%	99.89%
<b>1 hr to 2hrs 25 min</b>	20	0.11%	100.00%
<b>TOTALS</b>	<b>17,981</b>	<b>100.00%</b>	



**TABLE TWO**  
**2007 FREQUENCY DISTRIBUTION**  
**OF PRIORITY CALL RESPONSE TIMES (EOs)**

<b>MINUTE RANGE</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENTAGE</b>	<b>CUMULATIVE PERCENTAGE</b>
<b>&lt;=8:59 IS THE STANDARD</b>	10,883	60.37%	60.37%
<b>9:00-9:59</b>	1,443	8.01%	68.38%
<b>10:00-10:59</b>	1,208	6.70%	75.08%
<b>11:00-11:59</b>	975	5.41%	80.49%
<b>12:00-12:59</b>	725	4.02%	84.51%
<b>13:00-13:59</b>	633	3.51%	88.02%
<b>14:00-14:59</b>	469	2.60%	90.62%
<b>15:00-15:59</b>	331	1.84%	92.46%
<b>16:00-16:59</b>	267	1.48%	93.94%
<b>17:00-17:59</b>	200	1.11%	95.05%
<b>18:00-18:59</b>	150	0.83%	95.88%
<b>19:00-19:59</b>	122	0.68%	96.56%
<b>20:00-20:59</b>	97	0.54%	97.10%
<b>21:00-21:59</b>	65	0.36%	97.46%
<b>22:00-22:59</b>	61	0.34%	97.80%
<b>23:00-23:59</b>	36	0.20%	98.00%
<b>24:00-24:59</b>	23	0.13%	98.12%
<b>25:00-25:59</b>	48	0.27%	98.39%
<b>26:00-26:59</b>	32	0.18%	98.57%
<b>27:00-27:59</b>	34	0.19%	98.76%
<b>28:00-28:59</b>	21	0.12%	98.87%
<b>29:00-29:59</b>	31	0.17%	99.05%
<b>30:00-44:59</b>	106	0.59%	99.63%
<b>45:00-59:59</b>	31	0.17%	99.81%
<b>1 hr to 2 hr 47 min</b>	35	0.19%	100.00%
<b>TOTALS</b>	<b>18,026</b>	<b>100.00%</b>	

Factors That Affect Response Time

Ambulance response time is related to ambulance availability. Ambulance availability depends on the number of ambulances available and the number of ambulance calls. **Excessive demand on ambulance units negatively impacts ambulance response time.** Other factors that can increase response time include weather, road closures, time of day, topography, street patterns and traffic density.

### **RECOMMENDATION NO. 1:**

EMS Administration should identify the factors that hamper paramedic response time and determine which factors the Bureau can control. For example, if excessive demand is a primary factor, EMS Administration should try to address demand by having more ambulance units available during peak usage periods.

### **RECOMMENDATION NO. 2:**

In addition to average response time, EMS should calculate frequency of response times as a better indicator of performance and efficiency.

### **Unit Hour Utilization Effectiveness**

The standard measurement of ambulance usage across the nation is unit-hour utilization (UHU). UHU is the ratio of the number of hours spent delivering EMS to the total number of unit-hours that an EMS system could possibly deliver services in a specified time period. UHU is calculated using all ambulance runs.

Although Pittsburgh has ambulance service 24-7, the City's EMS does not have the same number of ambulances available on all three shifts. Pittsburgh EMS has 13 ambulances (units) that work two shifts every day and one shift with 10 ambulances (units) available. Therefore, average number of ambulances (EMS units) available each day is 12 (13 ambulances +13 ambulances +10 ambulances/3 shifts).

The standard formula used to compute UHU is as follows:

$$\text{Unit-hour utilization (UHU)} = \frac{\text{Annual number of EMS runs} \times \text{Average length of call}}{\text{Average number of EMS units available} \times 8,760 \text{ hours}}$$

This formula usually assumes ambulance units work 24 hours, seven days a week yielding 8,760 hours per year. Most UHU calculations also assume a one hour average length of call (time to complete a call). The auditors used the one hour average as does City EMS for its UHU calculations.

### **UHU Variables**

UHU target ratios are affected by many factors and target ratios differ from region to region. Ambulance availability, population density and demographics can significantly affect UHU measurement. For example, a service area with a high elderly population would theoretically have more calls than a service area with mostly younger residents.

UHU Acceptable Ranges

The auditors' research found acceptable target UHU ratios ranging from 0.33 to 0.50. A UHU in this range theoretically allows ambulance crews time to return to the station, to re-fuel, sanitize the ambulance if needed, restock, wash-up, eat, and rest. The Philadelphia Controller's Office used a UHU of 0.42 (an average of the range) as the optimal target ratio for its audit of Philadelphia's EMS. The auditors assessed Pittsburgh EMS against this 0.42 target and against the maximum acceptable target of 0.50.

**TABLE THREE  
UHU RATIO FOR ALL EMS UNITS**

YEAR	NUMBER EMS RUNS	AVGAGE RUN LENGTH	AVG. # EMS UNITS	UNIT HOURS PER YEAR	CITY OVERALL UHU	PHILLY AUDIT TARGET UHU	MAXIMUM TARGET UHU
2006	57.082	1 HOUR	12	8760	0.54	0.42	0.50
2007	58.716	1 HOUR	12	8760	0.55	0.42	0.50

**Finding:** In the last two years, EMS ambulance units have been overworked, with overall UHU exceeding the auditors' target level of 0.42 UHU and the high end acceptable target level of 0.50 UHU. In 2006, the overall EMS ambulance fleet UHU was 0.54 and in 2007 overall UHU was 0.56.

**TABLE FOUR**

2006 UHU (Unit Hour Utilization) by Ambulance Unit			
AMBULANCE UNIT #	NUMBER OF CALLS	UNIT HOURS PER YEAR	ANNUAL UHU
5114	5397	8760	0.62
5105	5247	8760	0.60
5104	5204	8760	0.59
5106	4983	8760	0.57
5103	4884	8760	0.56
5101	4694	8760	0.54
5102	4631	8760	0.53
5108	4605	8760	0.53
5109	4507	8760	0.51
5107	3916	8760	0.45
5111*	3326	5840	0.57
5110*	3073	5840	0.53
5112*	2485	5840	0.43

\*These ambulances work 2 shifts per day (16 hours).

**Finding:** The entire EMS ambulance fleet (100%) was operating in excess of the auditors' UHU target of 0.42 percent. Over four-fifths (85%) of these ambulances exceeded the high end acceptable UHU of 0.50.

**Finding:** In 2006, individual ambulance unit UHU deviations from the high end 0.50 standard were worse than the overall ratio. As Table Four indicates, the UHU ratio for 11 of the City's 13 ambulance units ranged 0.51 to 0.62.

**TABLE FIVE**

<b>2007</b>			
<b>UHU (Unit Hour Utilization) by Ambulance Unit</b>			
<b>AMBULANCE UNIT #</b>	<b>NUMBER OF CALLS</b>	<b>UNIT HOURS PER YEAR</b>	<b>ANNUAL UHU</b>
5114	5588	8760	0.64
5105	5480	8760	0.63
5104	5317	8760	0.61
5103	4966	8760	0.57
5108	4875	8760	0.56
5106	4835	8760	0.55
5102	4761	8760	0.54
5101	4758	8760	0.54
5109	4448	8760	0.51
5107	4014	8760	0.46
5111*	3456	5840	0.59
5110*	3269	5840	0.56
5112*	2669	5840	0.46

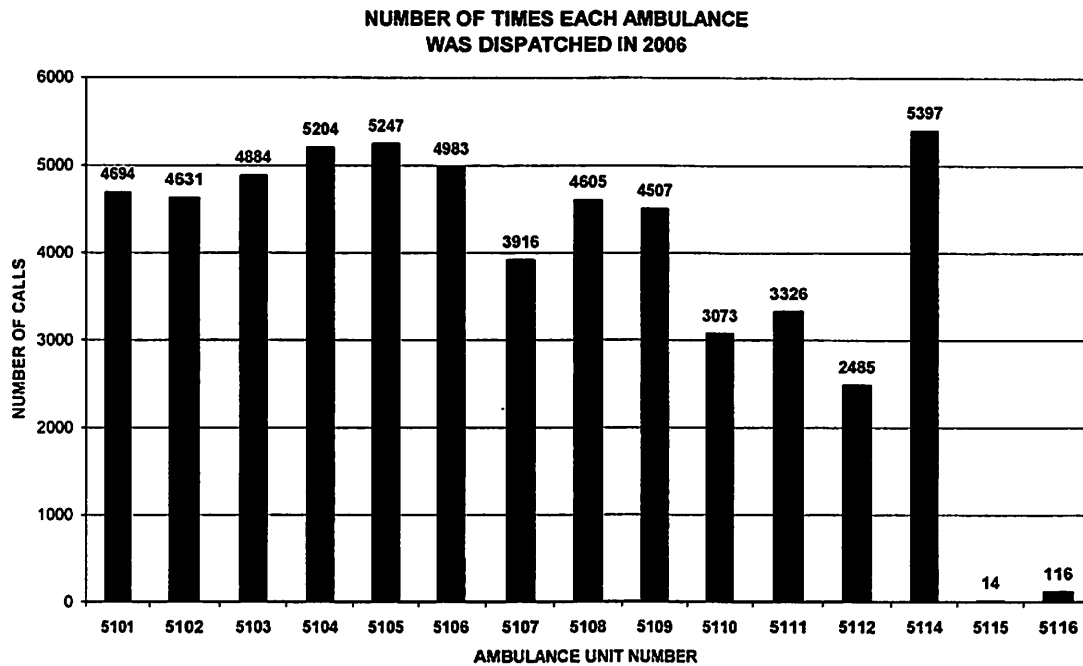
\*These ambulances work 2 shifts per day (16 hours).

**Finding:** In 2007, the entire EMS ambulance fleet (100%) was operating over the auditors' UHU target ratio of 0.42. Eighty-five percent (85%) of these ambulances exceeded the high end acceptable UHU ratio of 0.50.

**Finding:** In 2007, individual ambulance unit UHU deviation from the high end standard of 0.50 were even worse than 2006. As Table Five indicates, the UHU ratio for 10 of the City's 13 ambulances ranged from 0.51 to 0.64.

## UHU as a Function of Number of Service Calls

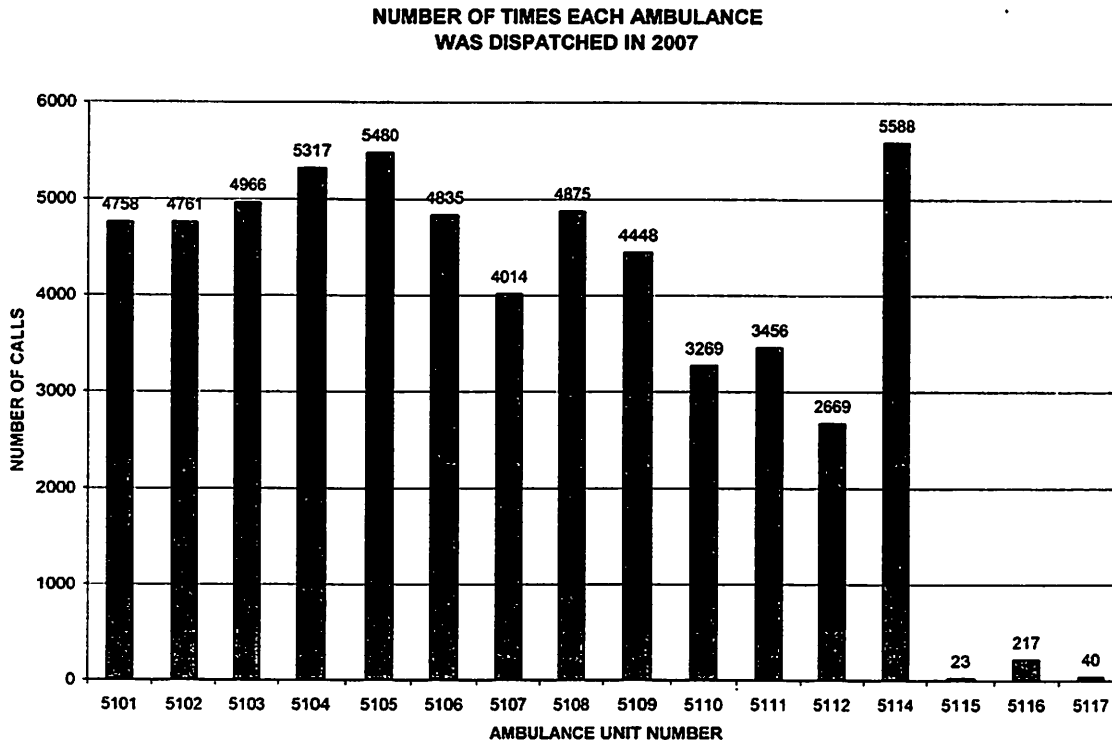
Unit Hour Utilization is a direct function of the number of call runs in a given time period. To prevent overload, the recommended range of calls per year is 2500 to 3000 per ambulance.



(Units 5115, 5116 and 5117 are used when regular units are out of service.)

**Finding:** The demand on some City EMS units is excessive. In 2007, twelve of the City's 13 ambulances workload greatly exceeded the recommended range of 2,500 to 3,000 runs. In 2007, City EMS averaged 4,904 call runs with a high of 5,588 runs for Medic 5114.

As the following chart indicates, Medic Units 5104, 5105 and 5114 are the busiest ambulances, each being dispatched on over 5000 calls. Medic 5104 is stationed in Central North Side, Medic 5105 is stationed in Oakland and Medic 5114 is stationed Downtown. Medic 5112, stationed in Lincoln Place, had the least number of calls and one of the lowest UHU ratios at 0.46.



EMS administration should be concerned that some ambulance units are handling extremely high workloads, over 5,000 calls a year. Over demand on ambulances will negatively impact response times and contribute to paramedic fatigue and vehicle wear and tear.

Ambulance Dispatch Analysis: Within District vs. Outside of District

911 calls are dispatched to the closest, available ambulance. The auditors analyzed CAD data to test how often 911 dispatched an ambulance unit within its assigned district and how often it was dispatched to another district. Tables 6 and 7 summarize the data for all ambulance dispatches in 2006 and 2007, respectively.

**TABLE SIX**

**2006  
EMS AMBULANCE DISPATCHES  
WITHIN AND OUTSIDE THE DISTRICT**

<b>UNIT #</b>	<b>TOTAL # CALLS</b>	<b>CALLS DISPATCHED WITHIN DISTRICT</b>	<b>PERCENTAGE</b>	<b>CALLS DISPATCHED OUTSIDE DISTRICT</b>	<b>PERCENTAGE</b>
5101	4,694	2,539	54%	2,155	46%
5102	4,631	2,934	63%	1,697	37%
5103	4,884	2,826	58%	2,058	42%
5104	5,204	3,144	60%	2,060	40%
5105	5,247	2,741	52%	2,506	48%
5106	4,983	2,978	60%	2,005	40%
5107	3,916	1,897	48%	2,019	52%
5108	4,605	2,104	46%	2,501	54%
<b>5109</b>	<b>4,507</b>	<b>1,360</b>	<b>30%</b>	<b>3,147</b>	<b>70%</b>
5110	3,073	1,321	43%	1,752	57%
5111	3,326	1,478	44%	1,848	56%
<b>5112</b>	<b>2,485</b>	<b>800</b>	<b>32%</b>	<b>1,685</b>	<b>68%</b>
5114	5,397	2,561	47%	2,836	53%
5115*	14	N/A	N/A	14	100%
5116*	116	N/A	N/A	116	100%
<b>TOTAL</b>	<b>57,082</b>	<b>28,683</b>	<b>50%</b>	<b>28,399</b>	<b>50%</b>

\*These units are not assigned a District and are used when additional assistance is needed.

**Finding:** In 2006, on average, 50% of the time EMS units were dispatched outside of their district as often as they were dispatched within their own district. Medic 5109, stationed in Shadyside, was dispatched out of district 70% of the time. Medic 5112, stationed in Lincoln Place, was dispatched out of district 68% of the time.

**TABLE SEVEN**

<b>2007</b>					
<b>EMS AMBULANCE DISPATCHES WITHIN AND OUTSIDE THE DISTRICT</b>					
<b>UNIT #</b>	<b>TOTAL # CALLS</b>	<b>CALLS DISPATCHED WITHIN DISTRICT</b>	<b>PERCENTAGE</b>	<b>CALLS DISPATCHED OUTSIDE DISTRICT</b>	<b>PERCENTAGE</b>
5101	4,758	2,421	51%	2,337	49%
<b>5102</b>	<b>4,761</b>	<b>1,779</b>	<b>37%</b>	<b>2,982</b>	<b>63%</b>
5103	4,966	2,769	56%	2,197	44%
5104	5,317	3,122	59%	2,195	41%
5105	5,480	2,600	47%	2,880	53%
5106	4,835	2,730	56%	2,105	44%
5107	4,014	1,825	45%	2,189	55%
5108	4,875	2,186	45%	2,689	55%
<b>5109</b>	<b>4,448</b>	<b>1,418</b>	<b>32%</b>	<b>3,030</b>	<b>68%</b>
5110	3,269	1,415	43%	1,854	57%
5111	3,456	1,474	43%	1,982	57%
<b>5112</b>	<b>2,669</b>	<b>781</b>	<b>29%</b>	<b>1,888</b>	<b>71%</b>
5114	5,588	2,640	47%	2,948	53%
5115*	23	N/A	N/A	23	100%
5116*	217	N/A	N/A	217	100%
5117*	40	N/A	N/A	40	100%
<b>TOTAL</b>	<b>58,716</b>	<b>27,160</b>	<b>46%</b>	<b>31,556</b>	<b>54%</b>

\*These units are not assigned a District and are used when additional assistance is needed.

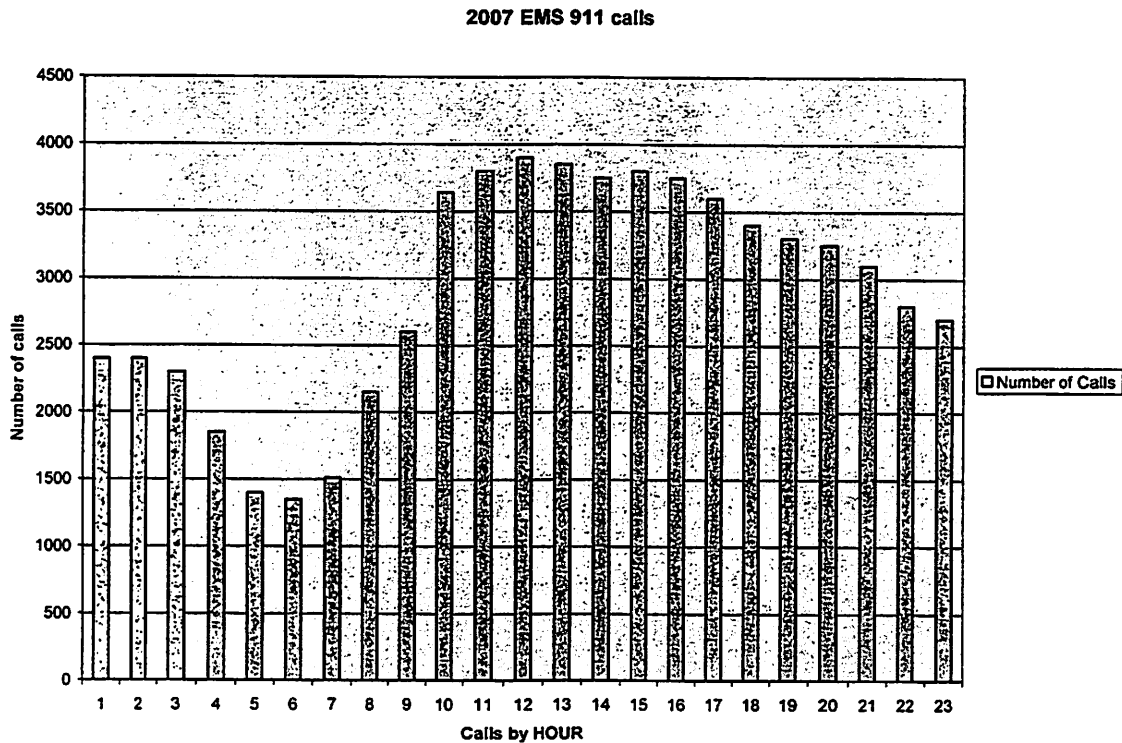
**Finding:** In 2007, EMS units were dispatched more often outside their districts, 54% of the time, than they were dispatched within their districts, 46%. Again, Medic 5109 and Medic 5112 were dispatched out of district the highest number of times. Joining them in high out of district dispatch volume is Medic 5102, located in the Brookline area.

Ambulances dispatched out of district are not available to answer emergencies in their home districts. Other ambulances must be dispatched, increasing the number of out of district dispatches. These out of district dispatches increase response times because the ambulances have to travel further to reach the call destination.

**Finding:** Excessive out of district dispatch is another indicator that the current EMS fleet is overburdened. This further supports the need for adding more ambulances to service the Pittsburgh area. In both 2006 and 2007, units 5114, 5104 and 5105 had the most calls and units 5112 and 5110 had the least.



## EMS Call Volume by Hour



The above bar graph shows the distribution of 911 calls to Pittsburgh EMS by hour. Graph was provided by the Deputy Chief.

**Finding:** The graph clearly shows that the peak hours for EMS calls are between 10 a.m. and 6 p.m. This time frame overlaps two shifts: the 7 a.m. to 3 p.m. shift and the 3 p.m. to 7 p.m. shift. These are the shifts with 13 ambulances in service. The night shift, with the lowest call volume, has 10 ambulances available.

### Reducing Unit Hour Utilization Ratios

#### **RECOMMENDATION NO. 3:**

To reduce EMS' overall and individual ambulance UHU ratios, the City must reduce individual ambulance usage (the number of runs per ambulance). The only way to reduce ambulance run load is to have more ambulances in service.

### Hiring More Paramedics Will Reduce Ambulance Usage

EMS Administration anticipates hiring 8 more paramedics by May. These eight new hires would bring EMS up to current budgeted staffing levels. EMS would need to hire additional paramedics to help compensate the Bureau's loss of 4 Emergency Medical Technician (EMT) units in 2003. The Bureau's 30 EMTs were let go at the behest of the City's two oversight boards (Act 47 Coordinator and the ICA (Intergovernmental Cooperational Authority). Trained in a higher level of BLS techniques than the City's First Responders, the EMTs were dispatched to less serious EMS calls. This allowed the City's paramedics to be available for the more serious calls.

**Finding:** The anticipated new hires will fill current budgeted positions and will not reduce UHU rates. Reducing the Bureau's UHU will require more paramedics. Hiring more paramedics will require an increase in budgeted positions. The Bureau must hire three paramedics to staff one ambulance shift. The third paramedic provides cover for call offs, vacation and personal time.

### RECOMMENDATION NO. 4:

City and EMS Bureau Administration should study the feasibility of adding 6-12 more paramedic positions in budget year 2009. EMS Administration could add two ambulances (6 paramedics) to its two busiest shifts, the 7-3 and 3-11 shifts. This would increase average ambulance availability from 12 to 13.3 ambulances per day and would reduce EMS' overall UHU to the highest acceptable ratio of 0.50.

### RECOMMENDATION NO. 5:

Alternatively, EMS Administration should consider creating a hybrid shift based on historic call volume. Three ambulances could staff the centralized districts of 04, 05 and 14 between the hours of 10am-6pm. This time span includes the influx of workers commuting into and out of the City during the work week. The other ambulance unit could be added to district 11 to alleviate that district's overworked paramedics. A total of four units (12 paramedics) would allow a safe operating condition for the current overworked ambulance units.

**Finding:** The Bureau has 10 extra ambulances for accidents and other needed responses and will be acquiring 5 more ambulances this year. EMS anticipates no net fleet gain because it plans to replace 5 current reserve ambulances with the new vehicles.

## **RECOMMENDATION NO. 6:**

EMS Administration should determine if any of these new ambulances could be used for additional ambulance crews rather than used to replace reserve vehicles. This would reduce the cost of equipping additional ambulance crews.

### **Overtime Concerns**

Numerous press reports have been critical of excessive overtime earnings by some paramedics. Paramedics earn overtime for numerous reasons. Determining who gets some types of overtime is controlled by bargaining unit agreement parameters. Paramedics must bid to work special event details and to work extra shifts. The paramedic union agreement requires that bidding for these types of overtime is based on seniority, i.e., paramedics with the most years of service get first opportunity to accept overtime. This bidding requirement has resulted in a few senior paramedics getting a large amount of shift overtime which the City pays for. Much of the special events overtime payments, on the other hand, are recouped from the special event sponsors.

One factor affecting paramedic overtime is mandatory training classes. All paramedics are required to undergo specialized training three days a year. Because paramedics must be available during their entire shift, all training is done outside the regular work shift. Paramedics also accrue overtime when they are forced to work overtime late calls. An overtime late call occurs when a transport takes a paramedic beyond the end of his or her regular shift. Call-offs, workers compensation or illness, periodic scheduled time off and court scheduling are other factors that impact overtime.

EMS Administration provided overtime information for 2006 and 2007. These figures include all regular overtime shift, overtime training and overtime late calls:

#### **2006**

Overtime in hours	48,761.65 (includes 1378 hours of holiday overtime)
Overtime in dollars	\$2,180,523.71
# Employees work overtime	154 (only 3 did not work overtime)
Percentage working overtime	98 %

#### **2007**

Overtime in hours	58,310.41 (includes 942 hours of holiday overtime)
Overtime in dollars	\$2,418,515.48
#Employees working overtime	152 (only 3 did not work overtime)
Percentage working overtime	98%
% overtime earned for 2007	28%

This data shows that the City's 2007 overtime costs for paramedic regular shift, training and late call overtime increased by 11%. The auditors requested a breakdown by regular shift, training and late calls overtime which EMS was unable to provide. Therefore, the auditors could not determine the percent of overtime costs due to regular shift overtime.

**Finding: Reducing ambulance usage by adding more ambulances would not only reduce the Bureau's UHU ratio but theoretically could also decrease overtime costs.** An expanded paramedic corps would result in a larger pool of paramedics to deploy when shift vacancies occur. Filling vacancies by redeploying regularly scheduled paramedics would greatly reduce the reliance on shift overtime to fill vacancies.

**Key EMS Performance Measures Summary**

<b>Measurements</b>	<b>2006</b>	<b>2007</b>
EMS Medical Runs	57,082	58,716
Percent of EMS Medical Runs Returned in-route (nulls)	19.68 %	21.02 %
Avg. Response Time *	9 min 34 sec	10 min 3 sec
EMS Ambulance Units	13	13
Percent of call priority responses under 8 min 59 sec	64.53 %	60.37 %
Avg. Response to Emergency Calls E-Os *	8 min 34 sec	9 min
Avg. Unit Hour Utilization	.54	.55
EMS Budget	\$12,670,809	\$13,048,611

\*Does not include 'nulls' (cancelled calls) and incorrect entries

**Center for Emergency Medicine Contract**

For over eight years, the EMS Bureau has contracted with the Center for Emergency Medicine of Western Pennsylvania (CEM) for medical operations direction and other services. This affiliation is of mutual benefit, providing research opportunities to CEM and educational opportunities and equipment to EMS.

For example, the Bureau currently is involved in a research project using saline solution in post-cardiac arrest patients to see whether it significantly impacts neurological ability or functions in the patient's recovery period. For participating in another research project, EMS will receive 53 new state of the art heart monitors at no cost to the City. This affiliation affords EMS access to the latest technological and medical advances.

According to EMS administration, Pittsburgh is the only EMS in the United States with a physician on call 24-7. This physician can be notified at anytime or make a

field call if necessary 24 hours a day, 7 days a week. The CEM Medical Director also approves new procedures, programs and training used by the Bureau.

### Increased Scope of Services and Increased Compensation

The current CEM contract term runs from July 1, 2006 to June 30, 2010. The contract's original annual compensation cap was \$50,000. In September, 2007, the annual compensation cap was increased from \$50,000 to \$80,000 for 2007, 2008 and 2009. Compensation for the first half of calendar year 2010 was increased to \$55,000.

The reason for the compensation increase was an increased scope of services for CEM to perform. In addition to medical operations direction and continuing education services, CEM is to perform "paramedic and/or EMT training and certification per applicable national and/or state curriculum".

The Personnel and Civil Service Department's employment announcement for the position of Paramedic requires that "all applicants must possess a current, valid Certificate of Completion of Emergency Medical Technician-Paramedic (EMT-P) training (from any state or a nationally recognized certificate) at the time of filing application". Persons desiring to be paramedics but lacking certification are directed to Community College of Allegheny County (CCAC) or the Center for Emergency Medicine (CEM) both of which "... offer training programs. Financial aid may be available to qualified students". Prospective students are urged to call CCAC or CEM at the numbers listed. The CEM website offers many certificate programs, including basic EMT and Paramedic, and lists the curriculum and tuition charges.

In an effort to increase EMS Bureau diversity, the City is paying the EMT/Paramedic certification tuition for two classes at the CEM. According to EMS administration, the first group of potential paramedics had EMT certification but received the rest of the paramedic training through the CEM free of charge. The second group will get both EMT and paramedic training through the City's contract with CEM free of charge.

### RECOMMENDATION NO. 7:

If the City is offering free training to prospective EMT's and paramedics, it should advertise such in its employment announcements. To only direct applicants to centers that "may" offer financial aid and not mention the City's free tuition program is misleading.

## Invoicing Compliance

**Finding:** The Center for Emergency Medicine is not being paid in accordance with contract requirements. The CEM is not submitting itemized invoices as required by its contract with the City.

Contract Section 3, Method of Payment, states that “Payment of said fee shall be made quarterly upon completion of said professional services in a manner satisfactory to City, and after receipt and approval by CITY of a certified invoice, *itemizing the services performed and the rates charged for such service* (emphasis added).”

CEM’s quarterly invoices only state “Please consider this an invoice for the services rendered for the provision of Medical Direction for the City of Pittsburgh Bureau of Emergency Medical Services” without itemizing services or costs. The invoice does give a phone number and contact “for questions regarding this invoice”.

EMS administrators have stated that the contract is a bargain for the City, especially with the on call physician, specialized equipment availability and research opportunities.

## **RECOMMENDATION NO. 8:**

To comply with contract payment requirements, EMS should ask for an itemized statement of services as agreed to by all parties to the contract. In the alternative, the contract should be amended to an agreed monthly payment that does not require an itemized invoice.

## Quickmed Claims Contract Billing Compliance

To comply with Act 47’s requirement that the City outsource billing and collection services for ambulance transportation provided by City EMS, the City entered into a three year contract with QuickMed Claims (QMC). This professional services agreement expired on December 31, 2007 but was renewed for another three year term. QMC is paid a percentage of the revenue it collects from Medicare, Medicaid, other healthcare providers and individuals.

Pittsburgh EMS hired a consulting firm to assess its billing contractor. The resultant *EMS Billing Performance and Compliance Assessment*, issued May 25, 2006, raised concerns that QMC was submitting itemized bills that were not in accordance with new Medicare fee schedule guidelines. The report recommended that QMC change its billing methodology to comply with the new guidelines. The new Medicare guidelines eliminated itemized charges and required a single base rate charge (based on the level of service provided) and ‘loaded’ mileage charges. The report also recommended that the City increase its base rates to compensate for the loss of itemized charge revenue.

A report issued by the City of Philadelphia Office of the City Controller comparing EMS billings and collections for fiscal year 2006 indicates that Pittsburgh's ALS and BLS ambulance charges have increased as recommended in the above cited *Assessment*. This rate increase implies that QMC is complying with current Medicare billing requirements.

**Finding:** According to EMS Administration, QMC, at the direction of EMS, is not complying with the contract requirement to bill City residents. The contract clearly states "QMC has been informed that, pursuant to the Act 47 Plan approved by City Council, CITY will begin directly billing residents. The terms of this Agreement shall apply to the billing of residents and non-residents alike."

EMS must accept Medicaid, Medicare/Medicare Supplemental and automobile insurance payments as payment in full for ambulance charges. Private health insurance payments are based on the company's 'usual and customary' payment. Non-resident ambulance users with private insurance have always been billed for the balance. Historically, City residents with private insurance have not been billed for this balance.

**RECOMMENDATION NO. 9:** If the City is not interested in collecting ambulance bill balances from City residents, the language about 'directly billing residents' should be deleted from the contract.

**CONCLUSION:** The City's Emergency Medical Services Bureau provides professional pre-hospital emergency medical care and hospital transport services to Pittsburgh's citizens and visitors. If the Ambulance Division had more ambulances in service, individual ambulance usage and response times would decrease. Improved response time would benefit the public and less demand on overworked ambulance units would benefit the paramedics who provide needed emergency medical care.

**APPENDIX**







*Robert J. McCaughan*  
Chief

## City of Pittsburgh Emergency Medical Services



*Luke Ravenstahl*  
Mayor

May 14, 2008

Controller Michael E. Lamb  
414 Grant Street  
Pittsburgh, PA 15219

Dear Controller Lamb,

Thank you for the opportunity to comment on the recent Bureau of EMS performance audit that was conducted by your office. First, let me say what a pleasure it was to work with your staff – they conducted themselves in a very professional manner.

By and large the audit validated some of the very concerns we have had for a number of years now. For example, the loss of the four EMT units in 2003 seriously impacted our day to day operations and our ability to respond to disasters and mass casualty incidents. In spite of that loss, we continue to respond to roughly the same number of calls today as we did in 2003 but with four less ambulances. This continues to negatively impact our response times which, as noted in the report, are greater than what is considered to be the generally accepted 9 minute standard for EMS systems. While most EMS systems around the country continue to rely on response times as a measure of performance there is little scientific data to support this.

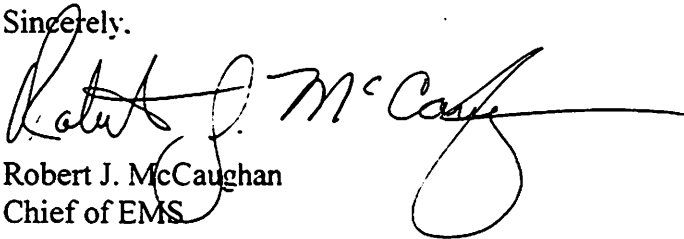
Fortunately, several recently published scientific papers have questioned this “standard” and have suggested that EMS systems be evaluated on the level of medical care being delivered as well. Such an audit of PEMS would show that we excel well beyond local, State and national standards of care. For example, our cardiac arrest survival rates are above the national standards and we have, thanks to new technologies and a close working relationship with the medical community, significantly reduced the door to balloon time for victims of heart attacks - the time it takes to diagnose a blocked artery and to get the patient to the cath lab for corrective actions. We have also been instrumental in setting several of the national standards of pre-hospital care right here in Pittsburgh and we pride ourselves to be on the cutting edge of resuscitation treatment and research.

While we continue to strive to make operational adjustments to improve our response times, it is difficult to do so with the number of personnel / ambulances we currently have in our system. This is further evidenced by our unit hour utilization (UHU) numbers which also exceed the generally accepted national guidelines and suggest a need for additional resources.

We will certainly take all of your recommendations under advisement and will continue to work closely with the Public Safety Director and the Mayor to continue to improve our highly regarded service. In fact, we are already taking steps to implement the changes you recommended regarding our Medical Direction and billing vendor contracts.

Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. McCaughan". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Robert J. McCaughan  
Chief of EMS

cc: Michael Huss, Director of Public Safety