



December 16, 2008

Mr. Dennis Gallagher
Office of the Auditor
City and County of Denver
201 West Colfax Avenue, Dept. 705
Denver, Colorado 80202

Dear Mr. Gallagher:

This is Denver Health's official response to the Denver Auditor's Performance Audit of the Emergency Medical Response System dated December 2008, originally received by Dr. Patricia A. Gabow, M.D., CEO, Denver Health at 4:55 p.m., Tuesday, November 25, and followed by a revised copy received at 12:07 p.m., Wednesday, November 26; and followed by a further revised copy received December 11 at 9:32 a.m. As required by City ordinance, our response is typed on letterhead. Because of the complexity of the issue and the length and level of detail, it is not possible to respond to the Audit in the limited table format suggested in your cover letter.

Denver Health fully cooperated with your office, responding to every request for information and interviews throughout the nine months of the Audit. This document represents our response to your findings and recommendations. Failure to respond to specific details of the audit report does not imply agreement with any specific item, detail or recommendation.

Confirmation of Compliance and Data Validity

We begin by saying we are gratified that you, after nine months of reviewing thousands of pages of documents and conducting numerous data analyses, found Denver Health in compliance with the intergovernmental Operating Agreement between Denver Health and the City, and that the Audit also found Denver Health performance data to be accurate and reliable. We concur with your reflection that 911 response times are not the optimal measure by which to judge the quality of an Emergency Medical Services System. Emergency Medicine is a formally recognized medical specialty. Emergency Medical Services Systems exist primarily to deliver medical care and therefore need to be evaluated on the quality of patient care provided as well as time of response.

General Comments

Any examination of a health care service must focus primarily on the clinical outcomes of that care. American health care is increasingly coming under scrutiny because of cost and quality. In this new environment three foci are becoming increasingly important:

- 1) The delivery of care within integrated health care models to maximize both efficiency and quality;
- 2) The delivery of evidence-based care; and



3) High value which reflects the interface of quality and cost.

Denver's current Emergency Medical Services System incorporates each of these concepts and principles.

Denver is extremely fortunate to have an excellent Emergency Medical Response System that includes first responders operating under consistent and expert medical oversight and the paramedic ambulance service as part of an integrated system of care which includes the Rocky Mountain Regional Trauma Center.

Denver Health's trauma center is an academic Level I trauma facility and has the best trauma survival rate in the United States. The pre-hospital component of the trauma service is among the many factors that make Denver Health the best in the nation for trauma survival. In addition, Denver has one of the best cardiac arrest survival rates in the country. It was Denver's good fortune that Dr. Peter Rosen, one of the founders of the specialty of Emergency Medicine was the Director of the Denver Health Emergency Department from 1977 through 1989, and helped shape our current Emergency Medical Services System.

A key to the high performing Emergency Medical Services System in Denver is the two-tiered configuration of emergency response. EMTs from the Fire Department are first responders, and can provide the immediately-needed life-saving procedures such as electricity (defibrillation) to the heart or CPR. Paramedics arrive and provide sophisticated medical care under the direct supervision of an Emergency Medicine physician. This model has been lauded by experts in the field of Emergency Medicine as being the cutting edge model in this field. Likewise, surgeons in the Rocky Mountain Regional Trauma Center confirm that excellent pre-hospital care provided in the two-tiered medical system response system plays a large role in trauma survival. The Level I trauma center at Denver Health has the best survival rate in the nation.

Emergency Medical Services Systems are complex, differ from city to city, and are evaluated in different ways. In Denver, the two-tiered system involves personnel and activity by the Denver Combined Communications Center (the 911 dispatch center), the Denver Fire Department and Denver Health. Denver Health is responsible for training and supervision of all Emergency Medicine care providers, both Denver Fire Department EMTs and Paramedics. All the health components of these systems operate under the medical oversight of the Emergency Medical Services Medical Director at Denver Health.

Denver Health subsidizes the paramedic service; the Division lost \$1.6 million in 2007.

Denver Health has taken the opportunity afforded by the Performance Audit to examine our Emergency Medical Services and seek potential improvement in process and outcomes, both within our organization and in cooperation with the City. To that end, Denver Health commissioned an academic policy paper by a health policy expert to undertake a comparative study of Denver and other Emergency Medical Services Systems. This study and the Auditor's Emergency Medical Services performance audit are complementary in providing suggestions for improvements to the services provided to the citizens of Denver. This report was personally reviewed with the Auditor and a copy of the report was provided.

Denver Health has begun to collaboratively review with the City prospective changes that could help the two-tiered Emergency Medical Services System perform even better, including enhanced data sharing, streamlining of the 911 dispatch system, improved identification of true life-threatening emergencies, and expanding citizen training in CPR and AED use.



In this response to the City Auditor’s audit, we have described the shortcoming of the Audit report, detailed the areas of agreement, addressed the areas of weakness, responded to the recommendations, and outlined proposals for a coordinated city-wide approach that will ensure continued excellence in caring for patients experiencing medical emergencies.

Legal Background Information

It is important for Denver Health to clarify the lines of authority and accountability related to the Emergency Medical Services core service. These clarifications are important for protection of our financial status, and our local, state and national standing as an integrated health care delivery system that is a model for the nation. Therefore, the ensuing paragraphs will serve as a reminder of the status of Denver Health as a political subdivision of the state of Colorado, the rules of governance, how the city contract is governed and rules that were applicable at the time of the audit. This confirms that Denver Health has been in complete compliance with the contract since its inception.

When the Denver Health and Hospital Authority was created by the Colorado legislature in 1994, the legislature declared, as a matter of statewide concern, the need for the Denver Health and Hospital Authority to be able to maximize its economic viability and productivity in order to avoid becoming increasingly dependent on city, state and other governmental subsidies and to take whatever actions were necessary to provide the “finest possible quality of healthcare.” CRS § 25-29-101 (1) (b). In creating the Authority, the legislature was careful to say that the Denver Health and Hospital Authority “shall not be an agency of the State or local government, and ... shall not be subject to administrative direction or control by any department, commission, board, bureau, or agency of state or local government.” CRS § 25-29-103 (1). The State statute plainly spells out the relationship between the Authority and the City and County of Denver. “On and after the transfer date, except for the power of the City and the Mayor to appoint and remove members of the Authority’s Board of Directors, the City shall have no further control over the operation of the health system.” CRS § 25-29-106 (1).

“The needs of the citizens of the State of Colorado and of the City and County of Denver will therefore be best served if the Denver Health system is operated by a political subdivision charged with carrying out the mission and programs of the Denver health system.” C.R.S. § 25-29-101 (1) (e). The statutory mission of the Authority includes providing “high quality Emergency Medical Services to Denver and the Rocky Mountain region”. CRS § 25-29-104 (1) (b).

In the Operating Agreement negotiated between Denver Health and the City in 1996, the City agreed that Denver Health “is at all times subject to the provisions of the Act (the state statute appearing at CRS § 25-29-101 et seq.) and will comply with the Act (and) in any event of a conflict with the terms of this (Operating) Agreement, the provisions of the Act supersede. Amended and Restated Operating Agreement, page 3 (paragraph under (N.)

When the City entered into the Operating Agreement with Denver Health, the Agreement established certain Core Services (Appendix A), Non-Core Services (Appendix B) and services provided by the City to Denver Health (Appendix C). A large group of administrators, executives and elected officials formed the negotiating team which crafted the language of the Operating Agreement. Members of the negotiating team included three elected City Council members, members of the Mayor’s administrative staff, City Attorneys, members of the Denver Department of Health and Hospitals staff, a board member of the Board of the Department of Health



and Hospitals, and counsel representing the entity which was to become Denver Health. Nine months of detailed discussion and negotiation preceded the adoption of the Operating Agreement. With respect to Emergency Medical Services, the negotiating team had the additional benefit of the recommendations of the Mayor's Emergency Medical Services Task Force which met from 1994 to 1995. Emergency Medical Services were identified as a core service for which Denver Health was designated as an "exclusive provider." In Section 4.2 a. of the Operating Agreement, exclusivity is described:

"In order to ensure the Authority will have the opportunity to be competitive in the changing health care system, the Authority will have the right to provide the Core Services to the City on an exclusive basis and the City shall not engage in competition with, or engage another service provider to compete with the Authority in providing the Core Services."

Moreover, in Section 3.1 b., "exclusivity" is further defined:

"The City recognizes and agrees that the Authority shall be the exclusive provider of the Core Services and that the City shall not engage or permit any other person or entity to perform the Core Services including, but not limited to, the City's Department of Environmental Health. The City shall not remove a Core Service from the Authority unless there has been a material violation by the Authority of the Standard of Care for a Core Service, when considered as a whole.

For the purposes of the Operating Agreement, Standard of Care is specifically defined. Standard of Care means the then-current community standards for health care services by similar health care providers located in the City metropolitan area; provided however, that if no similar health care providers are located in the City metropolitan area, then the then current national standard shall be considered. The performance criteria for each Core Service set forth in the respective Appendix shall be considered a part of the initial Standard of Care for each Core Service." Thus, the Standard of Care to be applied to the delivery of pre-hospital emergency medical care for the City are the standards utilized by other public Denver metropolitan area providers as well as the performance criteria in Appendix A-2. Prior to your October 16 Audit Alert, Denver Health did not agree to, nor was it informed of, any request of the City to modify the standard of care for Emergency Medical Services.

The Standard of Care in the Operating Agreement remains as written until the appendices of the Operating Agreement are amended.

Shortcomings of Audit

Denver Health has six concerns with the Audit that we believe are important and should be noted.

- 1) This is an audit of an Emergency MEDICAL Response System, yet no one on the audit team had the requisite medical expertise. In meetings with the auditors working on this audit, they conceded that they have no medical expertise. Medical understanding of the impact of decisions affecting patient care is critical.

- 2) State law mandates supervision of EMTs and paramedics by a licensed emergency medical physician. The audit overlooks the significant legal requirement that the Denver Fire Department EMTs and Denver Health Paramedics can only provide medical services while acting under the authority and supervision of that physician.
- 3) No patient outcome data which is relevant to the Emergency Medical Services System is included for either Denver Fire Department first responders or for Denver Health Paramedics. Such data is available from Denver Health for two significant patient outcomes, cardiac arrest and trauma survival. This failure to look at actual outcomes led to the erroneous conclusion that the system has significant limitations. The primary focus of this audit was on response time.
- 4) No cost-benefit analysis, fiscal note or overall cost parameters for Denver Fire Department first responders or Denver Health Paramedics were included. From an audit perspective this is of particular importance because of the likely substantial financial cost of meeting the NFPA standard to the Denver Fire Department, the Denver Combined Communications Center and Denver Health.
- 5) No analysis of the actual utility of the NFPA standards was undertaken. This is of special concern given the importance that the audit has placed on adherence to this standard. In this regard, it is noteworthy that the Institute of Medicine which is part of the National Academy of Science, charged by Congress with advising the federal government on issues of medical care, in its publication “Future of Emergency Care,” did not even mention this standard but rather noted:

“To build accountability into the system [*referring to Emergency Medical Services Systems*], the committee recommends that **the Department of Health and Human Services convene a panel of individuals with emergency and trauma care expertise to develop evidence-based indicators of emergency care system performance (3.3)**. Because of the need for an independent, national process with the broad participation of every component of emergency care, the federal government should play a lead role in promoting and funding the development of these performance indicators. The indicators developed should include structure and process measures, but evolve toward outcome measures over time. These performance measures should be nationally standardized so that statewide and national comparisons can be made.”

It is important to note that the NFPA does not have a physician member of its Board, nor does it have a physician-level individual contributing to the development of its standards on the Technical Committee on Public Emergency Service Communications, or the Technical Committee on Fire and Emergency Service Organization and Deployment. These two committees have promulgated all of the time “standards” that the audit references.

- 6) There is selective use of “national standards” and benchmarks. For example, the audit focuses heavily on NFPA standards and uses the City’s adoption of them in a retrospective fashion to show limitations of the Emergency Medical Services System. In another area, the audit has a finding that suggests that measurement of the period of time from the time of the 911 call to arrival at the scene is the optimal gauge of system performance, but fails to note that only 1.9% of cities use this measurement as a



Level One Care for ALL

primary performance metric. There are numerous other such examples. Similarly, Grady in Atlanta, and Hennepin in Minnesota, are used as benchmark examples regarding their use of oversight groups. However, the issues with these systems, their outcome data and the solutions they are currently exploring were not included in the audit.

Denver Health Agrees with Some Areas of the Audit

The Audit made a number of important and relevant observations which should be utilized by the City and Denver Health to improve the Emergency Medical Response System.

- The City's reliance on response time as the key Emergency Medical Response performance measure significantly limits its ability to assess the total system effectiveness since response times have not been directly correlated to patient outcomes. Response time by itself is not an optimal measure to assess the effectiveness of an Emergency Medical Services System. Response times do not correlate to patient outcomes which can serve as an important indicator of system performance.
- Best practices research indicates that effective Emergency Medical Services Systems must be based upon multiple factors.
- The same types of information should be collected, analyzed and externally reported by both Denver Health and the Denver Fire Department to maximize performance as critical first- and second-tier responders.
- There is a level of redundancy in the multi-level call screening and transfer process. Multiple level call screening process is time consuming and appears to be unnecessarily duplicative.
- The call center processes are not consistently aligned to maximize the CAD system data collection.
- The Emergency Medical Services industry is in a state of evolution as new medical technologies emerge and demand for these services increases.
- The two-tiered system errs on the side of over-responding rather than under-responding to medical emergencies.
- For a system to be considered high performance it must measure its performance using nationally accepted high performance standards and it must continually compare itself to other high performance emergency ambulance services.

Response to Audit Recommendations

1. Auditor's Recommendation: We recommend that the City establish an oversight entity or position with authority and responsibility for the entire emergency medical call lifecycle including all segments and agencies involved from call receipt to the time a responding unit is returned to service.

Denver Health Response:

In response we recommend an expanded role for the Medical Director.

A medical system should have medical oversight. The Emergency Medical Response System, including call-takers and dispatchers performing Emergency Medical Dispatch (EMD), BLS (Denver Fire and Denver Health) and ALS providers (Denver Health Paramedics), functions under the oversight of the Medical Director and by the extension of the Medical Director’s license. This oversight includes emergency medical dispatch, response and quality outcome measures, and must include the authority to oversee all aspects of the system. Common methods of reporting are essential in the assessment of quality measures and performance.

By State regulation, that responsibility lies with the Denver Health Emergency Medical Services Medical Director. His medical license is extended to the Denver Fire Department EMTs and to the Denver Health paramedics in order to allow them to provide pre-hospital medical care. The Colorado Department of Public Health and Environment and Board of Medical Examiner regulations preclude any administrative non-medical third-party interference with patient medical care.

The Mayor serves as the single authoritative executive overseer for the system as he has direct responsibility for the Department of Safety including the Combined Communications Center and Denver Fire Department first responders. He also has responsibility for oversight of the contract with Denver Health.

By Colorado statute, the Denver Health and Hospital Authority “shall not be an agency of the state of local government, and...shall not be subject to the administrative direction or control by any department, commission, board, bureau, or agency of state or local government.” CRS § 25-29-103 (1). The State statute plainly spells out the relationship between the Authority and the City and County of Denver. “On and after the transfer date, except for the power of the City and the Mayor to appoint and remove members of the Authority’s Board of Directors, the City shall have no further control over the operation of the health system.” CRS § 25-29-106 (1).

- 2. Auditor’s Recommendation: We recommend that the oversight entity or position be responsible for consistent monitoring and reporting of emergency medical response performance, including the Denver 9-1-1 Call Center, ALS ambulance services (Denver Health and other private services) and BLS (Denver Fire Department and Denver Health) medical response services**

Denver Health Response:

In response we recommend an expanded role for the Medical Director over all the quality of care.

The Medical Director is responsible for medical oversight of the system. The Medical Director must work with all entities involved in the delivery of Emergency Medical Services (911, Fire and Paramedics) to ensure quality and performance measures are being met. Quality and performance measures should be correlated to clinical outcomes.

The City and Denver Health should work together to have Denver become a leader in the nation in developing evidence-based performance measures that span the continuum of the Emergency Medical Response System. In this regard, patient outcome measures should be developed for both the Denver Fire Department first responders and Denver Health Paramedic ambulances.

The health policy report that studied Denver’s Emergency Medical Service System recommended:

“...that Denver Fire Department move to statistical data reporting rather than narrative reporting and routinely report procedure data to Denver Health quality staff. The development of a unified data base, accessible to both agencies, would be ideal.” Denver Emergency Medical Services (EMS) System Examining the Data, Clarifying Misperceptions, October 2008, Tracy L. Johnson, Ph.D., Principal, Health Policy Solutions, page 32.

3. Auditor’s Recommendation: We recommend that the oversight entity or position establish clear performance objectives and reporting requirements for each segment and agency involved in the emergency medical response process, with direct accountability to the City’s oversight authority. The following reporting requirement and performance objective considerations should be included as part of this process:

Denver Health Response:

The City and Denver Health should work together to have Denver be a leader in the nation in developing evidence-based performance measures that span the continuum of the Emergency Medical Response System. In this regard, patient outcome measures should be developed for both the Denver Fire Department first responders and Denver Health Paramedic ambulances.

The health policy report that studied Denver’s Emergency Medical Service System recommended:

“Participating in patient registries and other forms of routine data collection on patient outcomes as well as continuing on-going research on EMS quality of care. If you can’t measure it, you can’t manage it. Augmenting research on patient outcomes with more frequent snapshots of both first responder and paramedic performance would ensure that negative quality trends are detected and corrected quickly.” Ibid, p. 41.

As stated above, the health policy report that studied Denver’s Emergency Medical Service System recommended:

“...that Denver Fire Department move to statistical data reporting rather than narrative reporting and routinely report procedure data to Denver Health quality staff. The development of a unified data base, accessible to both agencies, would be ideal.” Ibid, p. 32.

- a. Auditor’s Recommendation: Utilization of industry best practices and benchmark information;

Denver Health Response:

As a medical system continuously focused on medical best practices, Denver Health agrees that the Emergency Medical Services System should utilize best practices that are evidence-

based. However, as noted by the Institute of Medicine, evidence-based standards for the medical practice in the arena do not exist (see page 5).

As a health care system, Denver Health is committed to developing and implementing evidence-based practices. The fact that evidence-based practices do not exist for Emergency Medical Services Systems provides the opportunity for Denver Health and the City of Denver to be leaders in the country in the creation of these practices. Because both the Denver Fire Department EMTs and Denver Health Paramedics are under the direction of a single Medical Director who oversees the health care provided in the system, this is a very real possibility.

In addition, there is an inherent problem in relying on response times since (except in cardiac arrest where first responder response time is critical) they do not correlate with patient outcomes.

- b. Auditor's Recommendation: Determining whether NFPA standards and/or other standards governing emergency medical response will be utilized and addressing any related current Denver Revised Municipal Code compliance issues;

Denver Health Response:

In this regard, it is important to note the NFPA describes itself as a fire prevention advocate that utilizes volunteers to serve on its standards committees to develop consensus codes." Website of the National Fire Protection Association.

The NFPA does not purport to develop evidence-based standards, nor does it have a physician as a member of its Board. Nor does it have a physician contributing to the development of its standards on the Technical Committee on Public Emergency Service Communications, or the Technical Committee on Fire and Emergency Service Organization and Deployment. These two committees have promulgated all of the time "standards" that the audit references.

Moreover, of the people who comprised the City's committee that adopted the NFPA standards as part of the Fire Code, there did not appear to be any Denver Health or any other medical representatives to offer medical perspective to that group. It is fundamental for the safety of the citizens of Denver to have the medical standards applicable to their care under medically appropriate standards.

As described earlier in this document, the NFPA standards have never been incorporated into the Operating Agreement between the City and Denver Health. The standards applicable to the Operating Agreement are those contained in it and the standards of similar Emergency Medical Services Systems in the Denver metropolitan area. In reviewing the standards used by such services in the communities surrounding Denver, we have ascertained that Denver Health is the only primary Emergency Medical Services provider in the Denver metropolitan area to have an obligation to meet a response time standard. None of the surrounding communities – as is the norm nationally – report outcome-based performance criteria. This is due primarily to the lack of national

standards for Emergency Medical Services Systems. In addition, none of the surrounding Denver metropolitan Emergency Medical Services Systems are required to report any performance statistics externally. All other local Emergency Medical Services systems have aspirational “goals” rather than compliance “standards.” By virtue of comparison with other community providers, Denver Health is a leader in all areas of Emergency Medical Services provision.

Furthermore, there is tremendous cost associated with the complete adoption of the NFPA standards for the Denver Fire Department, Denver Combined Communications Center and Denver Health. Before such expensive consensus standards are imposed upon the City and County of Denver and its taxpayers, an evidence-based analysis of the ramifications of such measures should be made. In these precarious financial times, it would be short-sighted to impose such costs upon the City if they are not medically safe or efficient. This may explain why the National League of Cities has been a vocal critic of adoption of many NFPA standards. Perhaps equivalent standards would better serve the populace, or perhaps the NFPA standards should be replaced by the evidence-based standards recommended by the Institute of Medicine.

The ordinance adopting the NFPA standards allows for equivalent standards to be used. Since there currently is not a pre-defined set of national Emergency Medical Services evidence-based standards, Denver Health and the Emergency Medical Services Medical Director are looking forward to taking the opportunity to work with the City to develop evidence-based standards, and once again showcase Denver as a leader in the nation.

- c. Auditor’s Recommendation: Inclusion of clear sanction authority within the Operating Agreement for nonperformance;

Denver Health Response:

As an integrated Emergency Medical Response Services System that incorporates the Denver Police Department, the City’s Combined Communications Center, the Denver Fire Department and Denver Health, sanctions do not make sense for a system that is this highly integrated. The services are intertwined among these agencies, and performance outcomes are dependent on each partner fulfilling its own obligations. For example, the paramedics cannot quickly respond to a medical emergency if the Communications Center has not expeditiously informed them of the call. Therefore, any inclusion of sanctions would mean that the City would be required to sanction itself.

As described in the section discussing the dispute resolution clauses already in the Operating Agreement, it is far preferable to resort to informal dispute resolution than to time consuming and expensive court proceedings.

It also is important to note that the City Auditor in 1996 independently reviewed the proposed terms of the Operating Agreement, separately negotiated changes that the Auditor believed to be necessary to recognize the role of the Auditor in the Operating Agreement, and specifically reviewed the dispute resolution provisions to insert language that the Auditor desired.

Since Denver Health has been providing quality Emergency Medical Services to the citizens of Denver without any cost to the City and County of Denver, it is unclear why this audit would seek to add sanction provisions where there have already been 12 years of unchallenged nationally-lauded performance under this Agreement.

- d. Auditor's Recommendation: Developing performance measures that place a greater correlation of patient outcomes to emergency response times where possible through greater use of clinical outcome data;

Denver Health Response:

We agree that an emphasis on patient outcomes, as they relate to response times, is the best approach. This will require consistent reporting of medical performance to the Medical Director of the Emergency Medical Services System, by all components (911, Fire, Paramedics).

These reports can be used in conjunction with clinical outcome data to assess overall system performance, as well as to drive overall quality in the system.

Denver Health suggests the following clinical measures be regularly assessed and reported by both Denver Fire Department EMTs and Denver Health Paramedics:

BLS:

- 1) Arrival with AED/CPR capabilities within an agreed upon standard.**
- 2) Performance of 2 minutes of CPR protocol for unwitnessed cardiac arrest.**
- 3) Application of oxygen to patients in respiratory distress.**

ALS:

- 1) Patients with signs and symptoms consistent with cardiac ischemia and ST elevation:
 - i) Administration of aspirin unless contraindicated**
 - ii) Acquisition of a 12-lead ECG with appropriate, training-based interpretation by a paramedic.**
 - iii) Direct transport to an identified appropriate cardiac center.****
- 2) Rapid evacuation of seriously injured trauma patients.
 - i) Goal of scene time of less than 10 minutes 90% of the time.****

System:

- 1) 24/7 access to a board-certified emergency physician.**
- 2) Medical Director oversight of the Emergency Medical dispatch system.**
- 3) Cardiac arrest survival within the national standards.**
- 4) Trauma survival at or above the national standards.**

Denver Health would also like to work with the City and County of Denver on improving overall cardiac arrest survival through the creation of a robust community CPR and AED program. The provision of CPR and early defibrillation by bystanders has been demonstrated as an important contributor to saving lives of victims of cardiac arrest. Partnerships in this area will have community-wide benefit. Denver Health will continue to pursue evidence-based quality measures to assess system performance.

- e. Auditor's Recommendation: Clearly and consistently defining: (1) performance criteria and appropriate CAD data points that represent most appropriate time intervals for each agency and maximize transparency in reporting; (2) "good cause exemptions;" and (3) "clock start time";

Denver Health Response:
We agree.

- f. Auditor's Recommendation: Focusing performance measurement reporting and analysis on percentile/fractile calculations to avoid limitations inherent with time averages;

Denver Health Response:
Compliance is currently measured as fractile in the Operating Agreement, and the audit found Denver Health to be in complete compliance with the Operating Agreement.

The Operating Agreement currently includes performance metrics of average response time and compliance which are in competition with each other. As a system gets closer to 100% compliance, the average response time will move closer to what the compliance standard is (8:59).

Performance measurements, whether fractile or averages, have inherent limitations.

As previously stated, response time alone is not a complete indicator of the performance of an Emergency Medical Services System. Patient outcomes are a more accurate performance metric of a system as a whole.

- g. Auditor's Recommendation: Tracking and reporting use of private ambulance services to assist in the assessment of ambulance staffing and deployment adequacy; and

Denver Health Response:
Like Police and Fire, an Emergency Medical Services System must have mutual aid partners to function during periods of peak demand. These mutual aid agreements with neighboring Emergency Medical Services Systems, as well as private ambulance companies, are coordinated, maintained and utilized under the direction of the Emergency Medical Services provider to ensure quality of care and medical oversight.

All of the calls handled by private ambulance companies and mutual aid partners are included in Denver Health's overall response time calculations. Denver Health's compliance with the Operating Agreement, as acknowledged in the audit, includes this subset of calls.

In addition, under State statute, “on and after the transfer date, except for the power of the City and the Mayor to appoint and remove members of the Authority’s Board of Directors, the City shall have no further control over the operation of the health system.” CRS § 25-29-106 (1).

- h. Auditor’s Recommendation: Enhancing data analysis and data reliability utilizing data scrubbing techniques to improve reporting.

Denver Health Response:

We agree with this statement. Accuracy of data improves with the removal of data outliers. Agreement about how this is to be done should be codified after collaborative definitions are reached.

4. Auditor’s Recommendation: We recommend that the oversight entity or position provide direction and continuity by facilitating ongoing process improvements and operational efficiencies within and across agencies involved in the emergency medical response process including:

Denver Health Response:

Denver Health is continuously striving to improve operational efficiencies in all of its processes, and is a national leader in the application of the Toyota Production System LEAN methodology for process analysis and improvement to the health care industry. Denver Health has been successful at improving its processes using LEAN for nearly four years.

Denver Health has already begun to work with the City to improve processes in the Emergency Medical Services System. During the week of November 17, 2008, Denver Health coordinated a Rapid Improvement Event (RIE) in the Denver Combined Communications Center. This process, part of the Toyota Production System LEAN methodology was focused on call processing.

The November RIE included all of the participating agencies in the 911 system – Denver 911, Denver Fire and Denver Health. The RIE team analyzed the 911 call process from the time the phone rings in the Denver Combined Communications Center until an Emergency Medical Services call is ready to be assigned to a responding unit(s).

During the RIE, the team, which consisted of employees from each agency, developed rapid experiments, and immediately implemented as regular practices, some of those found to be effective. The implementation of these experiments resulted in a 93 second (33%) improvement in call processing time.

Additional recommendations were made as an outcome of the RIE. These will be implemented in the near future, and may result in an additional 45 second or more (conservative estimate) improvement.

Denver Health and Denver 911 are currently exploring the possibility of integration of Denver Police and Emergency Medical Services call processing functions to maintain the results of the rapid experiments, and to continually improve the services provided to the public.

- a. Auditor's Recommendation: Performing analysis of 9-1-1 call intake and processing function to identify specific actions to reduce response time and eliminate duplication of effort; and

Denver Health Response:

We agree that there are duplicative elements of the 911 call intake and processing at the Denver Combined Communications Center. These areas were identified for improvements during the RIE mentioned above, and several changes have already been implemented. Other suggested means of addressing these process issues are already under way.

- b. Auditor's Recommendation: Exploring alternative ambulance staffing and deployment models.

Denver Health Response:

While Denver Health is always striving for organization-wide improvement, the exploration of alternative staffing and deployment models is the sole responsibility of Denver Health, and not an oversight entity. The assertion that outside entities should take on this responsibility is in direct violation of State statute which says, "On and after the transfer date, except for the power of the City and the Mayor to appoint and remove members of the Authority's Board of Directors, the City shall have no further control over the operation of the health system." CRS § 25-29-106 (1).

Further, this is inconsistent with the function of the oversight entities referenced in the audit and used as comparison benchmarks by the audit team, which do not have oversight of the operational components of the respective Emergency Medical Services Systems (Grady and Hennepin).

5. Auditor's Recommendation: We recommend that the oversight entity or position partner with City Attorney's Office to establish an agreement with Denver Health and other private providers for the provision of emergency medical response services including serving as City lead to negotiate and define terms and conditions of the Agreement to be consistent with performance objectives and reporting requirements.

Denver Health Response:

The City already has an Operating Agreement with Denver Health that was initiated in 1997, and has functioned extremely well for 12 years. This agreement and the operational independence it has provided for Denver Health has enabled Denver Health to significantly increase its services to the citizens of Denver without any substantial cost to the City, and has helped Denver Health become a model for the nation and, in fact, representatives from both the Grady and Hennepin systems recently visited Denver Health seeking guidance in improving patient outcomes in their respective systems.

The provision of Emergency Medical Services is a Core Service under the Operating Agreement. Denver Health is the exclusive provider. The City cannot, by state statute, exercise any administrative direction or control over Denver Health. The City Attorney's Office cannot represent Denver Health in negotiations of contracts between Denver Health and subcontractors. Those subcontractors are providing services to Denver Health as a regional trauma center rather than to the City and County of Denver. It would be a violation of the terms of the Operating

Agreement for the City to enter into contracts with private providers to perform these Core Services.

Areas of Disagreement

Denver Health is providing a detailed response, not to criticize the work of the auditor or his staff, but rather, to place in the public record appropriate clarifications, corrections or different interpretations. Failure to respond to specific details of the audit report does not imply agreement with any specific item, detail or recommendation. Page numbers reference the November 26, 2008 version of the preliminary draft of the Audit.

- Page 4 – There is “significant limitation with the City’s Emergency Medical Response System.”

Denver Health Response:

This is an erroneous statement. When patient outcomes, the most important measure, are used, it is clear that the system in use in Denver delivers excellent patient care which is at or above the community standard.

The two situations most amenable to Emergency Medical Services response, cardiac arrest and trauma, demonstrate that Denver has an out of hospital cardiac arrest survival 2 to 4 times better than the national average, and that trauma survival at Denver Health, which reflects in part the Emergency Medical Services System, is the best in the country. (See appendix A and B). Of course, every system has opportunity to improve.

The audit found that Denver Health was in compliance with all of the terms of the Operating Agreement, and has accurately recorded its data.

- Page 4 – “While these industry standards vary and are not mandated by federal or state law they serve as excellent guidelines and criteria for establishing and monitoring emergency medical response systems.”

Denver Health Response:

We agree that industry standards vary and are not mandated by federal or state law. We do not agree that they are excellent guidelines for establishing and monitoring Emergency Medical Services Systems. As noted by the Institute of Medicine, national evidence-based standards for Emergency Medical Services Systems do not currently exist (see page 5).

The NFPA consensus standards govern a multitude of safety areas. These standards are one of many consensus standards designed to provide guidelines for Emergency Medical Service System care delivery, and are primarily written to govern the call-taking, dispatching, staffing, deployment and Emergency Medical Services response by “Career Fire Departments.”

The application of these “standards” to a medical and public health service such as an Emergency Medical Services System, fails to consider the most important performance standard, patient outcomes. While common evidence-based standards would be beneficial to define best practices, national evidence-based standards do not currently exist. A set of nationally accepted best practices would raise the bar for Emergency Medical Services Systems across the country, and

would be scientifically based. In addition, a national evidence-based set of standards would focus more on patient outcomes rather than the operational configurations and methodologies that dominate the current NFPA standards. Evidence-based standards would also allow for a cost-benefit analysis that would ensure cost-effective Emergency Medical Services Systems.

Through its own benchmarking, Denver Health was not able to find any Emergency Medical Services Systems in the Denver metropolitan area, or nationally, that strictly adhere to the NFPA standards governing Emergency Medical Services response, much less the entire 15 volumes of the standards. Likewise, Denver Health was unable to find any national Emergency Medical Service System that has strictly adopted or adheres to NFPA standards. Many communities have elected to select pertinent bits and pieces of the NFPA standards, but because of the enormous cost of meeting each and every standard set forth by the NFPA none have adopted them as a whole. In addition, there are only a few Emergency Medical Services Systems that have predetermined obligations to meet the components of the NFPA standards they have selected as goals. Of the Denver metropolitan area Emergency Medical Service Systems that are using NFPA standards as guidelines, none have an actual compliance obligation, only self-imposed “goals.”

Denver Health’s use of goals as compliance standards is consistent with the language in the Operating Agreement as well as the defined Standard of Care, and is what is found throughout other Emergency Medical Services Systems in the Denver metropolitan area and across the country.

- Page 4 – “...the Agreement contains two ambiguous ‘clock start time points for the emergency response measurement and audit work determined that Denver Health is currently adhering to a third ‘clock start time’ point that is less restrictive than the two time points currently in the Agreement.”

Denver Health Response:

The clock start time that Denver Health is currently adhering to – the time of the assignment of the responding unit – is the only one that is currently measurable using the CAD system. The current clock stop time is arrival of the responding unit at the scene.

Four of the seven Emergency Medical Services Systems (including Denver Health) referenced in the audit measure response times using this method.

- Page 4 – “...response time measures in the Agreement have been relaxed over time as the ‘compliance rate’ was reduced from 90% (the generally accepted percentage nationally) to 85%. in 2003 and the ‘average aggregate response time’ was increased from 6 minutes 30 seconds (6:30) to 6 minutes 45 seconds (6:45) in 2004.”

Denver Health Response:

This was reduced for both Denver Fire Department first responders and Denver Health. While 90% may be a goal, there is no evidence-based information or cost benefit analysis to support this.

- Page 4 – “...there is no single authoritative oversight entity monitoring and managing the entire process.”

Denver Health Response:

The Mayor of the City and County of Denver is the single authoritative executive-level oversight for all City departments, with direct oversight for the Denver Fire Department first response system and the Denver Combined Communications Center, and final oversight for the contract with Denver Health.

Only 47% of cities report Emergency Medical Services data externally. Therefore, Denver is ahead of most cities in having Denver Health report its data externally. None of the other Denver metropolitan area Emergency Medical Services Systems, which are the basis for the Standard of Care, report Emergency Medical Services performance data externally to an authoritative overseer.

- Page 5 – “The absence of clear enforceable requirements specific to emergency medical response services hinders the City from properly administering the Agreement.”

Denver Health Response:

Prior to the advent of the Denver Health and Hospital Authority, a community Emergency Medical Services task force in 1995 reviewed what kind of Emergency Medical Response structure should be implemented with the creation of the Authority. At the time of the development of the Authority, another large group of elected officials and city and medical administrators identified the performance criteria for all components of the Operating Agreement. These standards are not unclear. They address transport utilizations per hour and set a goal for Code 10 response.

In 2006, the Institute of Medicine expressly stated that there is no nationally recognized evidence-based standard for emergency medical care so it is not surprising that neither the City, the Authority nor this audit report was able to find one.

There is no finding in the audit that the City is improperly administering the Agreement.

The outcome data show that Denver Health has a well functioning system. As stated above, the Operating Agreement utilizes as a “Standard of Care” the current community standards for health care services that are utilized by similar health care providers in the Denver metropolitan area. Only one jurisdiction in the Denver metropolitan area – Denver Health – has specific Emergency Medical Services requirements. Therefore, Denver Health’s reporting of response time and utilization exceeds the standard used in the Denver metropolitan area.

- Page 5 – “...the list of allowable exemptions has increased from five exemptions in five general areas, in 2002, to eleven current exemptions in nine general areas.”

Denver Health Response:

The changes in exemptions arose from the defined “Standard of Care” outlined in the Operating Agreement. As stated above, current community standards for health care services by similar health care providers located in the Denver metropolitan area are used to define the “Standard of

Care.” In the case of exemptions, the suggested exemptions came from the city of Aurora. The actual exemptions in the Operating Agreement are:

- **Incorrect or inaccurate information received by the E911 address system.**
- **Change in the original address to which the ambulance was dispatched due to information received by the Denver Fire Department or Denver Police Department.**
- **Unavoidable delays caused by road construction or trains.**
- **Several weather conditions, including declared snow emergencies and or/ accident alerts where visibility is impaired, or significantly unsafe driving conditions are present.**
- **Protocol for Code 9 and 10 response as requested by EMT-B responders not followed.**
- **ALS already on scene, e.q. DIA, special events.**
- **Scenes where there are multiple ambulance responses.**
- **Mutual aid response, i.e. Denver paramedics responding to a call outside of Denver.**

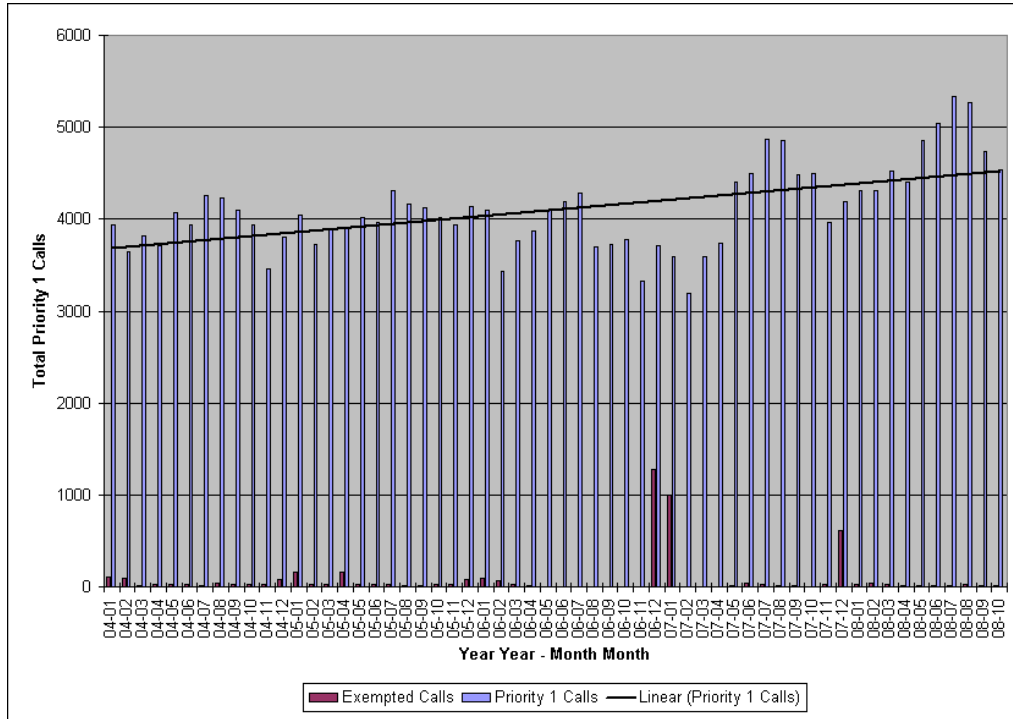
And three others listed in the Operating Agreement, not in the “Good Cause Exemption” list:

- **Test or training calls.**
- **Calls whose priority changed during the responses.**
- **Data capture errors.**

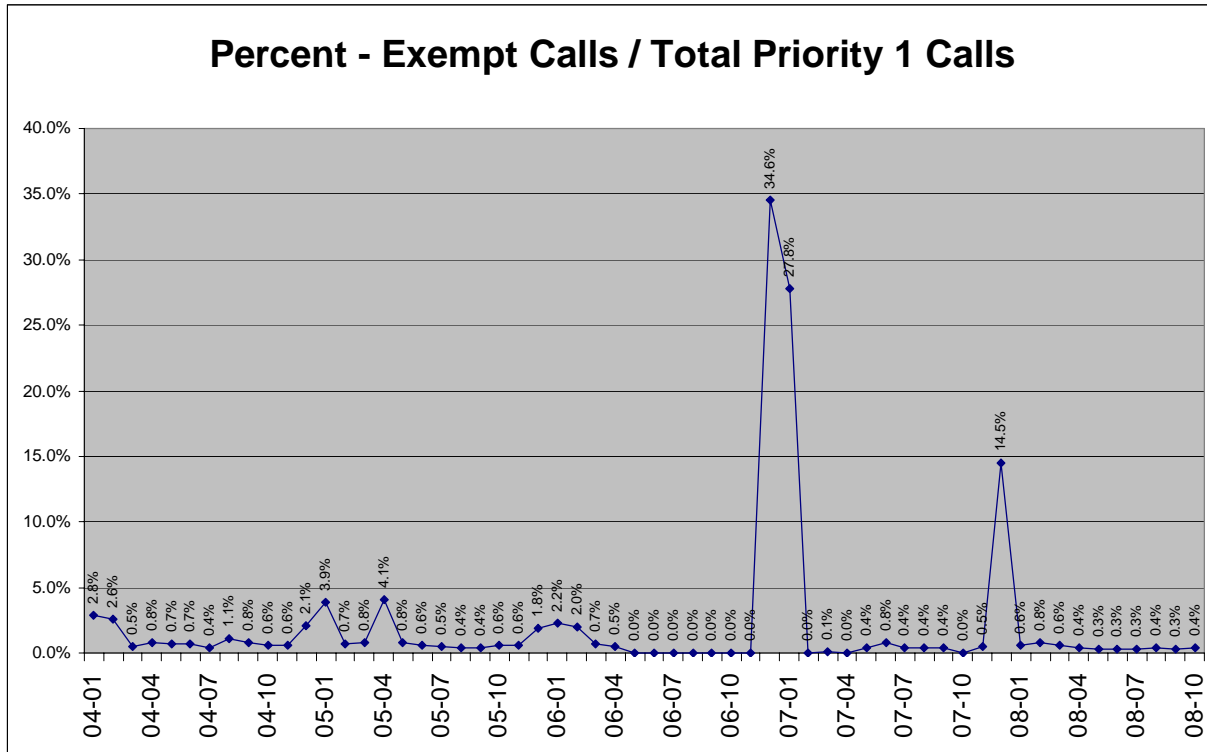
These exemptions are reasonable considering most reflect circumstances beyond Denver Health’s control.

These exemptions are used infrequently, and overwhelmingly the most common exemption used is for weather. In addition, the exemption for weather is always checked against the actual weather situation.

Exemptions do not “artificially” lower response times or provide “an incentive” to enter data that will lower response times. In fact, the reverse is true: entering delay data provides opportunities for quality improvement.



In Denver, all priority 1 calls are Code 10. Each peak in the chart above has an explanation, and it is the same one – weather. The City of Denver experienced severe blizzards in December 2006 and January 2007 (the biggest peaks on the graph). Also December 2007 and April 2005 were blizzard related peaks.



This total number of exemptions during the nearly four year period between January 1, 2004 and October 31, 2008, was 4,567 exemptions out of 238,345 total calls (1.9%).

Of the total calls meeting the eight “good cause” exemptions stated in the Operating Agreement or the three others that are also exemptions, there were 4,567 calls exempted from response time calculations. Of these, 3,512 (76.9%) of the exemptions were weather related; 1,002 (21.9%) were for DIA and other locations such as special events where a paramedic was already on scene with the patient. Despite the more expansive list of calls that could be exempted by Denver Health, these were the only calls excluded from response time calculations.

- Page 5 – “Emergency Medical Response Times Longer Than Industry Standards – The City’s emergency medical response times are longer than industry standards, including NFPA standards...”

Denver Health Response:

The standard setting organizations deserve specific comment. It should be noted that the audit contains little information on actual best practices because there is a paucity of evidenced-based information.

As noted by the Institute of Medicine, national evidence-based standards for Emergency Medical Services Systems do not currently exist (see page 5).

According to a report recently prepared by a health care policy expert:

“In Denver and in most modern EMS systems, medical protocols guide these (EMS response) decisions and significant attention is paid to the staffing and operational infrastructure necessary to support an effective emergency response. Note that ambulance emergency response times provide little insight as to how well dispatch and triaging functions operate. Nor do they tell us about the quality of care a patient receives after the ambulance arrives or how long it takes to treat them on scene and get them to an appropriate hospital. Ambulance and first responder response times provide valuable, but only partial information, about a portion of the 911 call cycle...” – Johnson, T., Denver Emergency Medical Services (EMS) System, 2008 October, p. 14.

- Page 10 – “Environmental Health has been designated oversight responsibilities for the Agreement between the City and Denver Health. In this role, the Department’s oversight activities are primarily restricted to budgetary matters, receiving and distributing Denver Health’s annual performance report and coordinating the annual Operating Agreement review and update process with various City agencies.

Denver Health Response:

The Mayor’s Office has utilized the Environmental Health Department at times to coordinate the provision of services under the Operating Agreement with Denver Health. At other times, an individual within the Mayor’s Office has been assigned lead responsibilities. Consistent with the statute creating the Authority, the role has been that of a contract administrator for the City rather than an overseer of Denver Health. In creating the Authority, the legislature was careful to say that the Denver Health and Hospital Authority “shall not be an agency of the state or local government, and...shall not be subject to administrative direction or control by any department, commission, board, bureau, or agency of state or local government.” CRS § 25-29-103 (1). The state statute plainly spells out the relationship between the Authority and the City and County of Denver. “On and after the transfer date, except for the power of the City and the Mayor to appoint and remove members of the Authority’s Board of Directors, the City shall have no further control over the operation of the health system.” CRS § 25-29-106 (1).

- Page 10 – “Denver Health provides both basic and paramedic level care. The majority of Denver Health’s responding units are ALS units staffed with paramedics. This advanced medical treatment and transport capability are two of the most important functions provided by Denver Health’s units. Additionally, Denver Health provides medical oversight direction as well as training, quality improvement and research activities to enhance and innovate pre-hospital care.”

Denver Health Response:

We agree that two important functions that Denver Health provides are advanced medical treatments and transport by this advanced medical team. We do not agree that these are the only important functions. The other functions listed are of critical importance.

Denver Health paramedics have a national reputation for excellence in clinical pre-hospital care. This reputation is a product of the system. The current structure of the 911 system provides

significant volume and acuity of calls. This, and the close association with Denver Health, an academic Level I trauma center, creates a fertile field for paramedics to cultivate skills, and an ongoing environment for learning and medical accountability.

Medical oversight of the Emergency Medical Response system, both Denver Fire Department first responders and Denver Health Paramedics, by a single Medical Director creates consistency in the delivery of pre-hospital care and training, and allows for potential quality improvement and research opportunities around both components of Denver's Emergency Medical Response System. This medical oversight is difficult for fire-based systems to have, and is a distinguishing characteristic of a high performing Emergency Medical Response System.

In fact, the recent health policy study of Denver's Emergency Medical Services System found:

“Denver EMS is among the minority of EMS systems that benefit from a full-time, in-house physician medical director.. Many EMS experts interviewed stressed the importance of a committed and empowered medical director with the charisma to inspire and the power to hire and fire. One EMS expert partially dissented from this view, noting that human resources issues can distract from medical direction. However, even in systems that separate medical direction from human resources functions, he emphasized that EMS medical directors must be empowered to determine independently which staff persons are qualified to provide medical services and have the ability to remove them from such duties or place constraints on them at any time.” Denver Emergency Medical Services (EMS) System Examining the Data, Clarifying Misperceptions, October 2008, Tracy L. Johnson, Ph.D., Principal, Health Policy Solutions, page 29.

- Page 15 – “Arguably, the travel time may be the most difficult segment of response time to control due to many factors beyond the driver’s control. Situations such as road construction, heavy traffic, single-lane or one-way streets, and natural barriers can cause delays increasing the travel time for emergency responses”

Denver Health Response:

We agree with the audit here, and would suggest that this raises the question of utility of response time and underscores the need for exemptions which the audit objects to in other places in the document.

- Page 15 – “Interpreting Emergency Medical Response Time Statistics”

Denver Health Response:

There is little to no evidence based clinical data to support 8 minutes 59 seconds or 90% response compliance by either average or fractile measures.

- Page 16 – “Audit Objectives”

Denver Health Response:

Although the Audit states that response time may not be an adequate measure, 5 of the 8 audit objectives focus on response time.

- Page 17 – “Determining Emergency Medical Technician (EMT) staffing levels and ambulance capacity and assessing their impact on response times...”

Denver Health Response:

Examination of EMT staffing of fire trucks would be a valid objective.

- Page – 17 – “Identifying standards, structures and other best practices used by other municipalities and governmental entities, regarding emergency medical response and comparing this information to the City’s response times and practices.”

Denver Health Response:

Of the 911 systems referenced in the audit, only ONE of the systems has a defined response time obligations (Hennepin County Emergency medical services).

All of the other systems referenced in the audit have response time goals, but do not have formal obligations to meet those self-imposed “standards.”

This is not uncommon nationally, and the application of a rigorous time compliance “standard” for the Denver Health Paramedic Division is in itself inconsistent with the practices of most other municipalities and governmental entities.

The majority of communities have aspirational response time “standards.” This includes every jurisdiction in the Denver metropolitan area except for Denver Health..

- Page 20 – “Audit work determined that the City is not monitoring and assessing the emergency medical response system in a comprehensive, strategic and deliberate manner, resulting in limited levels of transparency and accountability within the system and emergency medical responses that are longer than the timeframes recommended in emergency medical services industry standards.”
“System structural weaknesses and limited oversight practices identified by audit work hinder the City from effectively monitoring and improving the City’s overall emergency medical response system.”

Denver Health Response:

Of the seven Emergency Medical Services Systems analyzed by the Auditor, Denver Health is one of only two systems that are required to report performance data to an external entity. By virtue of this alone, Denver Health already has more oversight than all but one of the Emergency Medical Services Systems used as benchmarks by the Auditor.

- Page 20 – “reporting focuses on response time, which by itself is not an optimal measure to assess effectiveness of such a critical and complex system...”

Denver Health Response:

We agree with this statement; however the audit focuses primarily on this measurement even though quality data are available from Denver Health.

Emergency Medical Services Systems have changed since the Operating Agreement was developed 12 years ago, and we agree that outcome measurements, to the degree they are available and evidence-based, should be included.

As suggested in the Health Policy Solutions report, we agree that the Denver Fire Department should participate in a computerized outcome database along with the Denver Health Paramedic Division so that quality data across the system could be reported. The report recommended:

“Participating in patient registries and other forms of routine data collection on patient outcomes as well as continuing on-going research on EMS quality of care. If you can’t measure it, you can’t manage it. Augmenting research on patient outcomes with more frequent snapshots of both first responder and paramedics’ performance would ensure that negative quality trends are detected and corrected quickly. Denver Emergency Medical Services (EMS) System Examining the Data, Clarifying Misperceptions, October 2008, Tracy L. Johnson, Ph.D., Principal, Health Policy Solutions, page 41.

- Page 20 – “Once the City has established common governance and consistent accountability extended over the entire medical call and response system, appropriate response objectives, performance reporting requirements and Operating Agreement deficiencies can be effectively addressed.”

Denver Health Response:

There cannot be common governance over the entire response system, because, as stated above, the Authority is by statute an independent entity

The only logical way to have common governance over the entire medical call and response system would be to have the Denver Health Emergency Medical Services Medical Director oversee all of the medical aspects of the system. Medical oversight has to come from a physician.

- Page 21 – “Multiple Factors Contribute to Identified Emergency Medical Response System Weaknesses” and “Emergency Medical Response Weaknesses in the Operating Agreement Between the City and Denver Health”

Denver Health Response:

The audit does not demonstrate a negative impact on the health and well-being of the citizens of Denver. In fact, for the two major health issues for which the timing of the Emergency Medical Services Systems have direct impact, cardiac arrest and trauma, Denver performs extremely well.

We do agree that any system can be improved and we are working with the City to do that.

- Page 21 – “Benchmark comparisons indicated that all six jurisdictions included in the audit survey utilize a compliance standard of 90% for emergency medical response.”

Denver Health Response:

The audit referenced six Emergency Medical Services Systems across the country for benchmarking purposes in comparison to Denver Health – Wishard in Indianapolis; Grady in Atlanta; Hennepin County in Minneapolis; Pittsburgh; Cleveland; and Seattle. The first three are similar to Denver in that they are all hospital-based, tiered response systems. Pittsburgh and Cleveland are third service providers, and Seattle is a fire-based system.

Of these six Emergency Medical Services Systems, only one has a response time obligation that is not a self-imposed goal. Hennepin County is the only Emergency Medical Services System that, like Denver Health, has a compliance standard. In addition, it is the only Emergency Medical Services System that, like Denver Health, meets its compliance standards. The other five have aspirational “goals” of 90% compliance, but none are currently meeting that goal, and none are required to report compliance to an external entity.

- Page 23 – “No Enforcement Provisions”

Denver Health Response:

The Auditor’s report states that the Operating Agreement does not identify specific consequences if Denver Health fails to meet the performance goals established for Emergency Medical Services. While this statement is inaccurate. The audit report states that the City’s remedy for non-compliance with the Operating Agreement is to “undergo an extensive dispute resolution process.” Ordinarily, in contracts in the business world as well as government, contract negotiators strive to include as extensive a dispute resolution process as possible to avoid expensive and time-consuming court proceedings. Resolving a matter informally is generally considered an admirable action and one which could save the taxpayers hundreds of thousands of dollars.

The City agreed that no Core Service could be removed “from the Authority unless there has been a material violation by the Authority of the Standard of Care for a Core Service, when considered as a whole.” (Emphasis added.) Amended and Restated Operating Agreement Section 3.3.b. If there is a dispute over whether there has been a material violation by the Authority of the Standard of Care for a Core Service, when considered as a whole, then other actions are mandated under the Operating Agreement. The Operating Agreement notes that “the City recognizes and agrees that the Authority shall be the exclusive provider of the Core Services and that the City shall not engage or permit any other person or entity to perform the Core Services.” Amended and Restated Operating Agreement Section 3.1 b. Therefore, it is not an option for the City to take over the Emergency Medical Services from the Authority nor can it contract with anyone else to perform them unless or until all other curative provisions have been exhausted.

The Operating Agreement contains a comprehensive dispute resolution process for any “claim, controversy or other dispute arising out of the Agreement.” Amended and Restated Operating Agreement, p.5. The process calls for the issue to be referred to appropriate individuals of the

respective parties. If the matter calls for a corrective action to be taken, curative measures must be instituted to restore the service to the agreed upon level. This process is the “sole and exclusive” procedure to resolve a dispute under the Agreement.

The audit report states that “the absence of clear enforceable requirements specific to emergency medical services hinders the City from properly administering the Agreement.” It is not clear what is “improper” about the administration of the Agreement. Denver Health was found to be in compliance. The provision of Emergency Medical Services is the practice of medicine. There is an Emergency Medicine specialist assigned to oversee the medical practice of the EMTs and paramedics in Denver as a matter of law under the Colorado Emergency Medicine Regulations. The ultimate goal is to save lives. As noted by the Institute of Medicine, evidence-based standards for the medical practice in the arena do not exist. The audit did not identify any evidence-based medical standards that are not being followed, or any material violation by the Authority of the Standard of Care for a Core Service.

- Page 25 - “...best practices research revealed that an independent oversight entity is an essential component of an effective system.”

Denver Health Response:

Only two (Grady and Hennepin) of the six jurisdictions have an oversight council. Factually it is medical oversight that is essential.

The oversight entities governing Grady and Hennepin are much different than the type of oversight being suggested by the Auditor. Both the Grady and Hennepin oversight entities’ scope of influence ends at the development of local and regional medical standards and requirements. They are collaborative groups that work to define medical protocol, prioritize quality improvement and assurance and best practices. Neither of these groups have the ability to dictate or have regulatory authority over staffing, scheduling or deployment other than statutory definitions of what constitutes ALS and BLS ambulances. For instance Hennepin’s council defines the response time standards, but does not dictate how it is reached by each of the five agencies who have representatives on it.

There are collaborative groups that exist in the Denver metropolitan area, including the Denver Metropolitan Medical Directors Group, the Denver Emergency Medical Services Council, and the Colorado Regional Emergency Medical and Trauma Advisory Council. Denver Health is a member of each of these groups.

- Page 25 – “The ability to make decisions and take action to make systemic improvements is hindered without an entity that has clear and comprehensive governance authority.”

Denver Health Response:

Denver Health has clear and comprehensive governance authority.

Denver is fortunate to have an Emergency Medical Services System that is under a single Medical Director who is able to supervise the medical care provided by Denver Fire Department EMTs as well as Denver Health Paramedics who work as an integrated unit to save lives. In addition,

having the EMTs and paramedics working as integrated members of the Rocky Mountain Regional Level I Trauma Center – which is nationally renowned for its survival rates – allows for their involvement in cutting edge research. When medical advancements and new techniques are discovered and approved through this research, changes are made through the single overseer – the Medical Director. In addition, when quality of care issues arise, and changes need to be made to enhance medical care, the Medical Director is able to make changes to the system up to and including disciplinary actions and care delivery modifications.

The provision of Emergency Medical Services is highly regulated by the Colorado Department of Public Health and Environment and the Colorado Board of Medical Examiners because of its quintessential nature in providing medical care to the citizens of Denver and the State of Colorado. The Emergency Medical Services that Denver Health provides are to all of the citizens of Colorado and in particular, the citizens of the Denver metropolitan area as recognized by Colorado statute. C.R.S. Section 25-29-101(1)(a) (II).

The Colorado Department of Public Health and Environment Rules Pertaining to Emergency Medical Services appear in 6 CCR 1015-3. In Section 12.8, it states,

“The county shall require each ambulance service operating within their (sic) jurisdiction to have a primary medical director meeting the requirements established by the Colorado Board of Medical Examiners as defined in the Colorado Board of Medical Examiners 3 CCR 713-6, Rule 500 to supervise the medical acts performed by all personnel in the ambulance service.”

The regulations of the Colorado Department of Public Health and Environment also establish minimum standards for State emergency medical and trauma care systems. These regulations appear in Chapter Two of 6 CCR 1015-4. The State in these regulations creates minimum acceptable levels of service for pre-hospital care. The State has adopted an emergency response time for ground transportation (ambulance) agencies. For high density metropolitan areas which encompass 100,000 people or more, the State of Colorado has established a “minimum acceptable level of service” response time of “11 minutes, 90% of the time.” 6 CCR 1015-4, Section 202, B. 2. Thus, to the extent that ambulance response times are a matter of state-wide concern, for cities over 100,000 population, this is the standard adopted by Colorado.

By State regulation, the Medical Director must “be a physician currently licensed to practice medicine in the State of Colorado;” “actively involved in the provision of emergency medical services in the community served;” “actively involved on a regular basis with the (emergency medical) service agency being supervised” including “involvement in continuing education, audits and protocol developments;” and “be trained in Advanced Cardiac Life Support.” 3 CCR 713-6, Section 3.1 a), b), c), d). It is this physician who has the legal, medical responsibility for oversight and supervision of these medical services.

Since an Emergency Medicine physician extends his or her license to practice medicine to Denver Fire Department EMTs and Denver Health Paramedics, the Colorado Board of Medical Examiners (which licenses physicians in the State of Colorado) has adopted rules regarding the

delegation and supervision of medical services to such unlicensed health care providers. In regulations appearing at 3 CCR 713-30, the Board of Medical Examiners recognizes that the Emergency Medicine physician is extending his or her license to EMTs and paramedics in order for them to provide medical care.

The Medical Director retains, by State regulation, “ultimate authority and responsibility for the monitoring and supervision, for establishing protocols and standing orders and for the competency of the performance of authorized medical acts.” 3 CCR 713-6, Section 3.2 d).

Hence, it is incorrect to state that there is no oversight of these Emergency Medical Services. The supervision is provided by the Denver Health Emergency Medical Services Medical Director, who in turn is overseen by the Colorado Board of Medical Examiners and the Colorado Department of Public Health and Environment.

- Page 25 – “The lack of any provisions in the Agreement regarding Denver Health’s use of private ambulance companies, in addition to the lack of any formalized agreements between Denver Health and private companies could potentially create liability for the City and may further hinder the City’s ability to monitor compliance with response time goals and standards”

Denver Health Response:

Every Emergency Medical Services System relies on some mutual aid, like Fire and Police. As the demand for Emergency Medical Services is only marginally predictable, mutual aid partners provide surge capacity. There are instances when Denver Health must call on its mutual aid partners and private ambulance companies for assistance. This is a small percentage of calls.

All of the calls handled by private ambulance companies and mutual aid partners are included in Denver Health’s overall response time calculations. Denver Health’s compliance with the Operating Agreement’s performance requirements, as acknowledged in the audit, includes this subset of calls.

- Page 28 – “City Does Not Review Denver Health Ambulance Staffing and Fleet Deployment Practices”

Denver Health Response:

The assertion that an outside entity should take on this responsibility is in direct conflict with the State statute referenced above.

As detailed extensively above, such decisions must reflect evidenced-based health care decisions.

- Page 29 – “Three of the six benchmarking systems surveyed provided their response UHU. Of these jurisdictions, Denver Health had the highest response UHU of 66%. This could be an indication of an excessive demand on ambulances that might result in increased response times and responder fatigue, and could in turn increase the risk of other negative impacts such as errors and accidents”

Denver Health Response:

The performance criteria in the Operating Agreement is the transport UHU (unit-hour utilization ratio). As found by the audit team, Denver Health is currently in compliance with the Operating Agreement, which states that transport UHU will not be higher than 0.5 (see appendix).

In addition, transport UHU provides a better analysis tool when it comes to reviewing and maintaining paramedic skills. It has been proven that more experienced paramedics make fewer errors in both judgment and technique. The comment that this “could be an indication of responder fatigue and could in turn increase the risk of negative impacts such as errors and accidents,” is purely speculative.

- Page 35 – “Denver Health’s Chute and Travel Response Times Compliant with Current Agreement but Are Longer Than Industry Standards”

Denver Health Response:

The Auditor found Denver Health to be in complete compliance with the Operating Agreement and found all data provided by Denver Health to be accurate.

Denver Health’s chute and travel times are in alignment with other community Emergency Medical Services Systems’ performance. Denver Health is the only Emergency Medical Services System in the Denver metropolitan area that regularly reports performance statistics, and is therefore a leader in this area.

As noted earlier, industry standards are not well defined, and Denver has an opportunity to become a leader in identifying meaningful evidence-based standards.

- Page 38 – “...according to the AAA ‘high-performance emergency ambulance service is the delivery of clinical excellence, response-time reliability, economic efficiency, and customer satisfaction—simultaneously.’”

Denver Health Response:

Under AAA definitions as quoted in the audit, the Denver Health Paramedic Division is a high performing Emergency Medical Services System. Denver Health is among the minority of Emergency Medical Services Systems nationwide that report performance statistics externally, which demonstrates accountability.

Through the reporting of, and compliance with, performance standards, Denver Health’s annual Report to the City provides data that accounts for service costs, ensures economic efficiency and demonstrates high performance in clinical services, which firmly places the Denver Health Paramedic Division as a “high-performance emergency ambulance service in the delivery of clinical excellence, response-time reliability, economic efficiency and customer satisfaction.

Under the regulations adopted by the Colorado Department of Public Health and Environment, the State of Colorado has adopted ambulance response time minimum standards. The State has adopted an emergency response time for ground transportation (ambulance) agencies. For high density metropolitan areas which encompass 100,000 people or more, the State of Colorado has



established a “minimum acceptable level of service” response time of “11 minutes, 90% of the time.” 6 CCR 1015-4, Section 202, B. 2. Thus, to the extent that ambulance response times are a matter of statewide concern, for cities over 100,000 population, this is the standard adopted by Colorado. Denver Health is clearly in compliance with that standard.

Conclusion

In conclusion, as America struggles to develop a true high performing health system for this nation, it is imperative that national evidence-based standards to measure and evaluate the effectiveness of Emergency Medical Services systems be incorporated in the 2009 health care reform discussions. The IOM recommended, and Denver Health concurs, that, because of the need for an independent, national process with the broad participation of every component of emergency care, the federal government should play a lead role in promoting and funding the development of these performance indicators. These performance measures should be nationally standardized so that statewide and national comparisons can be made. Denver can play a role in this, as many of the characteristics of a high performing system are already in place here. As always, Denver Health is committed to working collaboratively with our partners in the City to enable the City and County of Denver to provide its citizens with the highest quality health care and to be a model for this nation

Respectfully submitted this 16th day of December, 2008.

Patricia A. Gabow, M.D.
CEO
Denver Health



Level One Care for ALL

Appendices

A. Quarterly Reports

February 12, 2008

August 8, 2008

B. Denver Emergency Medical Services (EMS) System Examining the Data, Clarifying Misperceptions, October 2008, Tracy L. Johnson, Ph.D., Principal, Health Policy Solutions.

C. Peer Reviewed Publications

An Evaluation of Out-of-hospital Advanced Airway Management in an Urban Setting, May 2005, *Academy of Emergency Medicine*, Christopher B. Colwell, M.D., Kevin E. McVaney, M.D., Jason S. Haukoos, M.D., MS, David P. Wiebe, M.D., Craig S. Gravitz, EMT-P, RN, Will Dunn, EMT-P, Tamara Bryan, EMT-P

Paramedic Response Time: Does It Affect Patient Survival?, July 2005, *Academy of Emergency Medicine*, Peter T. Pons, M.D., Jason S. Haukoos, M.D., MS, Whitney Bludworth, M.D., Thomas Cribley, EMT-P, Kathryn A. Pons, RN, Vincent J. Markovchick, M.D.

Eight Minutes or Less: Does the Ambulance Response Time Guideline Impact Trauma Patient Outcome?, *The Journal of Emergency Medicine*, Vol. 23, No. 1, pp 43-48, 2002, Peter T. Pons, M.D., FACEP, and Vincent J. Markovchick, M.D., FACEP.

D. Cardiac Arrest Abstract

The Epidemiology of Out-of-Hospital Cardiac Arrest in Denver, Colorado: Epidemiology and Outcomes, abstract and poster, Jason S. Haukoos, M.D., MSc, Gary Witt, M.D., Craig Gravitz, EMT-P, Julianne Dean, David M. Jackson, MS, Christopher B. Colwell, M.D., RN, Gilbert Pineda, M.D., Jeff Gunter, M.D., John Riccio, M.D., Peter Vellman, M.D., Dylan Luyten, M.D., Kennon Heard, M.D.