



Office of the City Auditor

CONSENT CALENDAR  
June 26, 2007

To: Honorable Mayor and  
Members of the City Council

From: Ann-Marie Hogan, City Auditor

Subject: Audit: Emergency Medical Personal Protective Equipment

RECOMMENDATION

Request the City Manager to report back by March 2008 regarding the implementation status of each of the City Auditor's recommendations in the attached report, and every six months thereafter, until all recommendations have been implemented.

SUMMARY

An audit of Emergency Medical Personal Protective Equipment was performed in the Fire Department. The purpose of the audit was to determine if policies and procedures were in place to provide reasonable assurance:

1. Medical personal protective equipment (PPE) for emergency medical staff (EMS) was available.
2. Medical PPE was worn when appropriate.

Audit fieldwork began on March 6, 2007, and concluded on April 12, 2007. The audit report contains three findings and four recommendations. The audit found that the Berkeley Fire Department appeared to be providing EMS staff with appropriate medical PPE. However, EMS responders were not always donning some types of medical PPE when appropriate

FISCAL IMPACTS OF RECOMMENDATION

Care was taken to make audit recommendations that appeared to be cost effective to implement.

CURRENT SITUATION AND ITS EFFECTS

The review identified the following concerns:

- EMS responders were not always donning (putting on) some types of medical PPE when appropriate. The PPE that Fire staff reported most frequently not donned when appropriate were medical goggles and TB masks. Several reasons why were given, including a lack of enforcement by officers and some concerns with the fit of medical goggles.

When medical responders do not wear medical PPE when appropriate, there is increased risk these employees will be exposed to blood and to other potential infectious materials while performing their occupational duties. (Finding 1)

- A comprehensive daily medical PPE supply checklist to help ensure staff belt packs, ambulances, and apparatus were adequately stocked with all appropriate types of medical PPE was not available. This may have contributed to medical PPE not always being readily available to EMS staff. (Finding 2)
- A lack of established, adequate, medical supply inventory policies and procedures was a concern. It appears some of the current and planned procedures could increase the risk that Fire stations or main inventory may run out of a medical PPE item. (Finding 3)

CONTACT PERSON

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Attachment:

1. Emergency Medical Personal Protective Equipment Audit Report

# City of Berkeley



## Audit of Emergency Medical Personal Protective Equipment

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Presented to Council on June 26, 2007

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## **I. OBJECTIVES OF THE AUDIT**

The objectives for this audit were to:

Determine if policies and procedures were in place to provide reasonable assurance:

- A. Medical personal protective equipment (PPE) for emergency medical staff (EMS) was available.
- B. Medical PPE was worn when appropriate.

The Auditor's Office scheduled performance audits of the Fire Department as part of the fiscal year 2007 audit plan. The 2007 audit plan was presented to City Council on June 20, 2006. Specific objectives related to medical PPE were selected as a result of a risk assessment survey of Fire Department staff.

## **II. SCOPE AND METHODOLOGY**

The scope of this performance audit was limited to PPE for Berkeley Fire Department (BFD) emergency medical staff during fiscal year 2007. Fieldwork started on March 6, 2007, and concluded on April 12, 2007.

The information used to complete this audit was obtained primarily from:

- An audit survey taken by first responder Fire Department personnel during November 2006.
- A review of documents from various agencies and organizations related to required or recommended medical PPE.
- A review of the Fire Department's policies and procedures.
- Interviews and discussions with Fire Department staff.
- Site visits to Fire station.

The audit procedures performed during this audit were not designed specifically to detect fraud; however, they were designed to identify weaknesses in policies and procedures that could allow fraud or abuse to occur and go undetected during the normal course of business. Audit work was performed in accordance with Generally Accepted Government Auditing Standards and was limited to those areas specified in the scope and methodology section of this report.

### III. BACKGROUND

#### Emergency Medical Services

The Fire Department provides ambulance services within Berkeley. Ambulance services are authorized by means of an ambulance and paramedic provider agreement with Alameda County. First responder personnel for medical emergencies are either emergency medical technicians (EMTs) who provide basic life support services or paramedics who provide advanced life support services.

#### Medical Personal Protection Equipment Requirements

BFD General Order (G.O.) 17.1 establishes the policy and procedure for the donning (putting on) of medical PPE for medical responders. In section IV of G.O. 17.1, titled Medical Personal Protective Equipment, it states:

- A. “Medical Personal Protective Equipment consists of the following:
1. Latex gloves<sup>1</sup>
  2. Goggles or chin-length face shields
  3. TB masks
  4. Gowns or aprons
  5. Belt packs to hold equipment<sup>2</sup>”
- B. “The standard response to any medical call, aid to invalid, medical assist or ambulance transport shall be the following:
1. All personnel will don their medical belt packs before stepping off the apparatus
  2. All personnel will have their medical goggles/glasses in place over their eyes before stepping off the apparatus
  3. All personnel will have latex gloves on before stepping off the apparatus”
- C. “Company Officer and/or Paramedic crew will determine the use of TB masks or splash gowns on scene. Patient information or symptoms shall be used as a guide on when to don the TB masks or splash gowns.”

Medical first responders have occupational exposure to blood and other potential infectious materials. For this reason, Cal/OSHA Bloodborne Pathogens Standard, California Code of Regulations (CCR), Title 8, requires the City to provide their EMTs and paramedics with PPE designed to eliminate or minimize these occupational exposures. In addition to Cal/OSHA, there

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<sup>1</sup> Latex medical gloves have been replaced with Nitrile medical gloves because of latex allergies.

<sup>2</sup> Equipment refers to Personal Protective Equipment.

are other agencies and organizations that impose or recommend medical PPE. Medical PPE requirements are included in the City's current and updated draft City Exposure Control Plan (ECP) and G.O. 17.1.

Compliance with medical PPE requirements is to be enforced by BFD officers. Section II of G.O. 17.1 states, "Officers shall ensure that members under their supervision comply with the standards outlined in General Order 17.1."

#### IV. RESULTS OF AUDIT

The City's policies and procedures that identify what EMS PPE is to be worn, and when it is to be worn, appeared to meet State and Federal minimum requirements. Additionally, BFD appeared to be providing EMS staff with Federal and State government required medical PPE as well as all California Emergency Medical Services Authority (EMSA) recommended medical PPE that was considered necessary by BFD EMS staff. However, there was concern that EMS staff did not always don or have their medical PPE readily available when appropriate. (Finding 1,3)

Medical goggles were not always worn as required, and TB masks were not always worn when appropriate. (Finding 1) When medical responders do not wear medical PPE when appropriate, there is increased risk these employees will be exposed to blood and to other potential infectious materials while performing their occupational duties. Complacency and lack of enforcement by officers appeared to be significant reasons why medical PPE was not always worn when appropriate.(Finding 1) The quality and fit of the goggles also appeared to be a contributing factor. The lack of a comprehensive daily medical PPE supply checklist to help ensure ambulances, apparatus, and employee belt packs were adequately stocked with all types of medical PPE may also have contributed. (Finding 2)

Staff did not identify out-of-stock medical PPE as the reason medical PPE was not always donned when appropriate. In fact all but one of the seven employees interviewed stated medical PPE was always available. However, our review of the medical supply inventory system in place in late March and April 2007 found a lack of established inventory procedures. We also identified some concerns with the adequacy of the proposed draft of new inventory procedures. It appeared both the current and proposed new procedures could result in instances of out-of-stock medical PPE as well as other types of inventory problems. (Finding 3)

**IV. FINDINGS AND RECOMMENDATIONS**

**Finding 1      Certain Medical Personal Protective Equipment Was Not Always Worn When Appropriate**

Emergency medical Fire personnel were not always wearing safety goggles and N95 masks (TB masks) when appropriate. Additionally, not everyone was wearing, or always wearing, a belt pack to hold his or her medical PPE as required. Goggles are worn to help prevent patient blood and body fluids from splashing into the eyes of staff. TB masks are worn to help reduce the chances that staff become infected with airborne pathogens such as tuberculosis. When medical PPE is not worn by EMS Fire staff when appropriate, there is an increased risk that they will have unnecessary exposure to infectious blood and other infectious materials.

Seventy-six percent of the Fire Department first responders (92 employees) took an audit survey during November 2006. Twenty-nine percent disagreed with the statement, “EMS responders don the appropriate personnel protective equipment (PPE) for all EMS calls.” Eleven of the survey respondents that disagreed with the above statement were contacted to find out why they responded as they did. Seven were interviewed. All seven indicated safety goggles were often not worn, or not always worn. G.O. 17.1 requires goggles or a face shield be put on before stepping off the apparatus for all medical calls. The reasons provided as to why goggles were not worn were, the rule to wear them was not enforced, they were not readily available and were sometimes shared, the quality or fit of the goggles was not good and therefore did not stay on the face well, the goggles fogged up making it difficult to see, and lastly, when goggles were not put on initially as required, later when needed, there was not the opportunity to do so.

Three of the seven responders also indicated TB masks were too often not worn when appropriate. They remarked that the masks made it hard to communicate with patients, sometimes responders did not have their masks readily available, or compliance was not a habit.

Lastly, although the seven EMS staff the auditor spoke with stated that the City was providing appropriate types of medical PPE, five of the seven stated not everyone was wearing a belt pack, or not everyone was always wearing a belt pack. Some EMS staff were carrying their PPE in an EMS medical bag. The concern with carrying the PPE in the medical bag is that if the medical first responder needs to don an item quickly, there may be unnecessary delay because the individual will have to first dig and sort through the medical bag to locate the required item. Belt packs are to be used by EMS staff to carry their medical PPE. G.O. 17.1 requires the pack be put on before stepping off the apparatus. One of the seven employees the auditor spoke with indicated that when a pack was lost, there were none in inventory, making replacement more difficult.<sup>3</sup>

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<sup>3</sup> See Finding 3 titled, Adequate Medical Supply Inventory Policies and Procedures Were Not in Place



***City Manager's Response***

*Fire agrees with the finding.*

**Recommendations for the Fire Department**

- 1.1 Reiterate to all staff the importance of always donning the appropriate medical PPE. Reiterate to the officers the importance of enforcing this requirement.
- 1.2 Consider a means of positively recognizing the staff that always wear appropriate medical PPE and having negative consequences for those who don't.

***City Manager's Response***

*Fire agrees with both recommendations and has already started implementing them.*

*Fire management is in the process of scheduling annual mask fit testing and issuing N95 replacement masks to all first responders. The training will be concluded by September 30, 2007 and the importance of always donning the appropriate PPE will be emphasized to all personnel during the training. In addition a departmental bulletin will be issued no later than July 1, 2007 to reinforce this requirement recognizing those who wear appropriate PPE and emphasizing consequences for those who don't.*

**Finding 2 A Comprehensive Medical Personal Protective Equipment Checklist Was Not Available To Emergency Medical Responders**

Checklists were available to EMS staff to help ensure all required medical supplies, and recommended quantities of each, were available on each ambulance and each apparatus. Most of these checklists included some medical PPE. However, none included a comprehensive list of all the medical PPE required in G.O. 17.1. It also appeared that not everyone was using the same ambulance checklist. Additionally, a list of what PPE is to be kept in the belt packs, and the quantities of each type of PPE to be kept, was not available. Not having all required medical PPE on the checklists may increase the risk that staff may not appropriately restock their PPE. It appeared that when EMS staff did run out of a particular type of PPE, they borrowed it from co-workers at the scene. However, in a heightened emergency situation, while performing EMS services, some indicated they would not take the time to obtain the appropriate medical PPE if it was not readily available.

**Ambulance Medical Supply Checklist**

Some paramedics stated they used the Alameda County EMS Field Manual Equipment and Supply schedule to ensure they had adequate quantities of each medical PPE in the ambulance or in their belt packs. However, the only medical PPE on this schedule was medical gloves, and only a minimum of four pairs were required. It appeared the ambulances and engines usually carried several boxes of gloves.

The BFD Paramedic Checklist kept in the ambulance at station 1 required only two pairs of goggles and two TB masks. It did not include gowns, gloves, or face shields. The Assistant Fire Chief provided the auditor with a different BFD paramedic checklist. This list did not include the goggles or face shields. The Assistant Fire Chief stated that belt packs and eye protection were issued to each employee and therefore were not included on the checklist.

Fire Apparatus Medical Supply Checklist

The fire apparatus medical supply checklist did not include medical PPE items with the exception of TB masks.

Belt Pack Checklist

There was no checklist or written procedure indicating what medical PPE, and their quantities, should be kept in the belt packs.

Schedule Showing Available Checklists

	Paramedic Checklist (1)		Paramedic Checklist (2)		Ambulance Daily Inspection Report		Apparatus Checklist		Alameda County Schedule	
	On List	Qty	On List	Qty	On List	Qty	On List	Qty	On List	Qty
Gloves	No		Yes	2 boxes	No		No		Yes	4
TB Masks	Yes	2	Yes	1 container each size	No		No		No	
Gowns	No		Yes	3	No		No		No	
Face Shield	No		No		No		Yes	3	No	
Goggles	Yes	2	No		No		No		No	
Belt pack	No		No		No		No		No	

(1) = Obtained from ambulance at station 1

(2) = Provided by Assistant Fire Chief

***City Manager's Response***

*Fire agrees with the finding.*

**Recommendation for the Fire Department**

- Update existing medical supply checklists to include a medical PPE section that identifies each type of medical PPE to be carried on each type of apparatus or on the ambulance, and the quantities of each. Additionally, update the existing medical supply checklists to identify the medical PPE EMS responders are to carry in their belt pack. Incorporate these updated checklists into the general orders.

***City Manager's Response***

*Fire agrees with the recommendation. Fire management will issue an updated policy to include a revised medical supply checklist which identifies medical PPE quantities and what is to be carried. The General Order will be revised by February 2008.*

**Finding 3 Adequate Medical Supply Inventory Policies and Procedures Were Not in Place**

At the time of the audit, Fire was in the process of developing and implementing new policies and procedures for medical supply inventory, which includes medical PPE. Although Fire staff did not indicate out-of-stock medical PPE was a material problem which had any significant negative impact on the donning of PPE when appropriate, there was some concern with the adequacy of the tentative inventory procedures as described. Some aspects of the new procedures were discussed with Fire. The auditor also had some concerns with some of the interim procedures observed. It appeared some of the current and planned procedures could increase the risk that Fire stations or main inventory may run out of a medical PPE item.

During March and April 2007 when the auditor reviewed medical supply inventory procedures, he was told that written policies and procedures documenting the new policies and procedures had been drafted. However, they would not be made available for review until approved by Fire Department management, which did not occur during our audit. However, one of the Paramedic Supervisors responsible for the development of the new procedures described the new draft procedures. Based on his description, a few concerns with the new system were discussed. It was the auditor's understanding that most of the new procedures described had recently been verbally communicated and implemented.

A significant departure from the new procedures described was observed. A Paramedic Supervisor stated that the department's medical inventory storage room, used to keep the inventories at each of the stations supplied, was to be kept locked. Staff were not supposed to get their own supplies from this main inventory. However, during an April 2007 site visit at Station 2, the door to the main inventory building was found unlocked. The auditor was told it had been left unlocked so the ambulance crews could restock, but that the door was generally kept locked. Leaving the medical supply room door unlocked, and allowing staff to get their own medical supplies, appears to decrease the ability of the Paramedic Supervisors to properly monitor inventory levels and assure medical PPE is always available. It also increases the risk of waste or theft of supplies. This practice appeared consistent with the procedure that was to be replaced.

Staff indicated one Paramedic Supervisor had been ordering the medical supplies (including medical PPE) when he observed quantities of an item were low. Staff from the various stations would come and get the supplies they needed. No accurate record of who took what was maintained. If the assigned Paramedic Supervisor who normally monitored and ordered the medical supplies was on vacation or otherwise unavailable, the person assigned to the position did not assume these duties.

***City Manager's Response***

*Fire agrees with the finding.*

**Recommendation for Fire Department**

3. Develop, document, approve, and implement policies and procedures for the ordering and inventorying of medical supplies (including medical PPE). These procedures should provide reasonable assurance that sufficient quantities of all appropriate medical supplies will always be available at all the stations and in the main inventory. Procedures should also include controls designed to prevent and detect inventory waste and abuse. Fire management should approve these procedures in writing. Obtain the assistance of the Finance Department as necessary.

***City Manager's Response***

*Fire agrees with the recommendation. Policies and procedures for ordering and inventorying of medical supplies will be included in a revised departmental General Order. The General Order will be revised by February 2008.*

**V. CONCLUSION**

It appears that the City is providing medical responders with appropriate medical PPE. However, EMS responders are not always donning some types of medical PPE when appropriate. There were several reasons why, including a lack of enforcement by officers and some concerns with the fit of medical goggles.

Additionally, a lack of established, adequate, medical supply inventory policies and procedures was a concern. It appears some of the current and planned procedures could significantly increase the risk that Fire stations or main inventory may run out of a medical PPE item. This condition also appears to increase the risk that inventory waste and abuse could occur and go undetected. Lastly, checklists to help ensure staff appropriately restock the ambulances, other medical response apparatus, and belt packs with sufficient medical PPE were not adequate. These conditions increase the risk that Fire staff will have unnecessary exposure to infectious blood and body fluids which increases health risks to employees and financial risk to the City.

We would like to thank the Fire Department for their cooperation during the audit. We would also like to thank the Information Technology Department for their assistance with the survey.