

County of San Bernardino

Auditor-Controller/Treasurer/Tax Collector
Internal Audits Section

County Fire Department: Emergency Medical Services Vehicles Medication Inventory Audit



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County Fire Department

Emergency Medical Services Vehicles Medication Inventory Audit

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August 13, 2020

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SUBJECT: MEDICATION INVENTORY AUDIT

In compliance with Article V, Section 6, of the San Bernardino County Charter, we have completed an audit of the County Fire Department’s (Department) Emergency Medical Services (EMS) Vehicles Medication Inventory for the period of October 2019 to December 2019. The primary objective of the audit was to determine if the controls over the medications stored in EMS vehicles are in place and effective. We conducted our audit in accordance with the International Standards for the Professional Practice of Internal Auditing established by the Institute of Internal Auditors.

We identified several procedures and practices that could be improved. We have listed these areas for improvement in the Audit Findings and Recommendations section of this report.

We sent a draft report to the Department on June 10, 2020 and discussed our observations with management on June 18, 2020. The Department’s responses to our recommendations are included in this report.

We would like to express our appreciation to the personnel at the County Fire Department who assisted and cooperated with us during this engagement.

Respectfully submitted,

Ensen Mason CPA, CFA

Auditor-Controller/Treasurer/Tax Collector
San Bernardino County

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Summary of Audit Results

Our findings and recommendations are provided to assist management in strengthening internal controls and procedures relating to the Department's Emergency Medical Services (EMS) vehicles inventory of medications.

The table below summarizes the audit findings and recommendations for this audit engagement. For further discussion, refer to the *Audit Findings and Recommendations* section of this report.

Finding No.	Findings and Recommendations	Page No.
Station 14 – Wrightwood, Station 25 – Crestline, Station 41 – Yucca Valley, Station 302 and Station 305 – Hesperia		
1	<p>Medications were not maintained in accordance with the Inland Counties Emergency Medical Agency (ICEMA) Policy, Procedure and Protocol Manual.</p> <p>We recommend the Department to periodically inspect and remove medications, which are expired in the EMS vehicles. We further recommend the Department implement regular inventory counts and inspections of medications in the vehicles to ensure medications are maintained within the mandatory requirements of the ICEMA Manual.</p>	8
2	<p>Recordkeeping and monitoring controls over controlled substances need improvement.</p> <p>We recommend the controlled substance inventory log is reviewed and signed by the captain or immediate supervisor when there is no incoming paramedic on duty. We further recommend the Department provide training to staff on proper documentation, reconciliation and inspection of controlled substance to ensure compliance with the Department policy. We also recommend the Department to update its policies and procedures, to include periodic monitoring as well as a defined frequency for the review of the CSI log, and identify the appropriate position responsible for such oversight. Lastly, we recommend that evidence of the reconciliation and review be maintained.</p>	10



Finding No.	Findings and Recommendations	Page No.
Station 41 – Yucca Valley and Station 302 – Hesperia		
3	<p data-bbox="386 604 1320 678">Documentation of controlled substance usage needs improvement.</p> <p data-bbox="386 678 1320 1035">We recommend the Department routinely provide level setting training to staff on accountability and recording of controlled substances. We further recommend the Department implement automated controls in the EPCR software, which would not allow required fields to be left blank. We also recommend that management perform periodic monitoring over the administration of controlled substances, which includes reconciling CSI logs to the monthly controlled substance reports and requiring the station captain to sign the CSI log.</p>	13
Station 302 and Station 305 – Hesperia		
4	<p data-bbox="386 1098 1320 1140">Access to controlled substances needs improvement.</p> <p data-bbox="386 1140 1320 1348">We recommend the Department limit physical access to controlled substances to the EMT-P on duty who is assigned to the paramedic unit during the course of the respective shift, as required by the San Bernardino County Fire Protection District Operations Directives.</p>	15



Emergency Medical Services (EMS) Vehicles Medication Inventory Audit

The Department

The San Bernardino County Fire Protection District (Department) covers approximately 19,000 square miles and serves more than 60 communities/cities within four Regional Service Zones (Mountain, North Desert, South Desert and Valley), including the City of Grand Terrace, City of Hesperia, City of Needles, City of San Bernardino, City of Twentynine Palms, City of Upland, Town of Yucca Valley, and unincorporated areas.

The EMS Section provides advanced life support (ALS) and paramedic transport services to the County. EMS is also responsible for keeping up with the ever changing emergency medical mandates, equipment and program development for both advanced and basic life support education and training. Every firefighter in the Department has some level of emergency medical certified training that requires continuing education and recertification. Along with training individuals in EMS, this section is actively involved with many pilot programs such as the community paramedicine program.

Below are the six locations that were visited during our fieldwork:

- EMS Training Center – E W Street, San Bernardino
- Station 14 – Elm Street, Wrightwood
- Station 25 – Crest Forest Drive, Crestline
- Station 41 – Twentynine Palms, Yucca Valley
- Station 302 – Olive Street, Hesperia
- Station 305 – Caliente Road, Hesperia



EMS Medication Process

EMS is defined as a service providing out-of-hospital acute care and transport to definitive care for patients with illnesses and injuries which constitute a medical emergency. The Department follows the guiding principles of Inland Counties Emergency Medical Agency (ICEMA). ICEMA was developed under a Joint Powers Agreement with San Bernardino, Inyo and Mono Counties. ICEMA is responsible for ensuring effective emergency medical services for the three county areas. Specifically, they are charged with the coordination, evaluation and monitoring of EMS within the public and private pre-hospital providers, specialty hospitals, paramedic base hospitals, as well as the effectiveness of EMS educational programs and medical disaster preparedness. The Department develops operations directives based on the ICEMA Policy, Procedure and Protocol Manual.

The EMS Division operates both Basic Life Support (BLS) and Advanced Life Support (ALS) EMS vehicles. BLS and ALS EMS vehicles have lists of mandatory medications with required minimum quantities that must be stored inside EMS vehicles based on ICEMA Manual 7000 - Standard Drug and Equipment List. EMS vehicles carry a wide array of medications for use during medical emergencies. This would include both controlled and non-controlled substances. Examples of non-controlled medications include diphenhydramine for allergy, glucose for diabetes patients, and albuterol for airway/breathing issues. EMS vehicles are also required to carry three controlled substances which are Fentanyl, Midazolam and Ketamine. These drugs are regulated by the Federal Controlled Substance Act (CSA). Only a licensed paramedic is allowed to access and administer controlled substances.

EMS vehicles are operated by a licensed paramedic (EMT-P/Paramedic AO) and an emergency medical technician (EMT-O). Paramedic Ambulance Operators (Paramedic AOs) are licensed paramedics who function in a lead capacity and render advance emergency medical care including airway management, initiating IVs, and administering critical medications. These individuals are also trained in operating pacemakers, and utilizing the defibrillator to administer electric shocks to patients with life-threatening conditions. Emergency Medical Technician Ambulance Operators (EMT AOs) maintain an EMT1 certification or greater. EMT AO function as an ambulance operator and provide basic medical care to patients.



Scope and Objective

Our audit examined the internal controls over medication inventory for Emergency Medical Services (EMS) vehicles as of September 2019.

The objective of our audit was to determine whether the controls over the medications stored in emergency services vehicles were in place and effective.

Methodology

In achieving the audit objective, the following audit procedures were performed including but not limited to:

- Review of applicable laws, regulations and the Department's policies and procedures.
- Interview of Department staff on policies, procedures and processes relevant to the areas being reviewed.
- Walk-through of activities to obtain an understanding of the EMS processes and identify key controls.
- Observation of the EMS vehicles operations relevant to the administration of medications.
- Physical examination and inventory of medications inside the EMS vehicles.
- Examination of original documents and system generated reports related to monitoring and administration of controlled substances.



Finding 1: Medications were not maintained in accordance with the Inland Counties Emergency Medical Agency (ICEMA) Policy, Procedure and Protocol Manual.

The ICEMA Policy, Procedure and Protocol Manual Reference no. 7010 "Basic Life Support (BLS) /Advanced Life Support (ALS) Standard Drug and Equipment List" states that each ambulance and first responder unit shall be equipped with the functional equipment and supplies. The list represents mandatory items with minimum quantities, excluding narcotics, which must be kept within the range specified. All expiration dates must be current. All packaging seals of medications or equipment must be intact. No open products or torn packaging may be used.

The following conditions were identified during our field visit:

Station 14 – Wrightwood

The minimum medication inventory levels were not maintained in 2 out of 2 EMS vehicles (ME14 & MA 14 – 1 medication) inspected as required by the ICEMA Manual.

Station 25 – Crestline

- The minimum medication inventory levels were not maintained in 2 out of 2 EMS vehicles (ME25 – 3 medications & MA25R – 2 medications) inspected as required by the ICEMA Manual.
- One EMS vehicle contained one medication (2 vials of Adenosine) which was 14 days past its expiration date at the time of inspection, and were not removed from the vehicle as required by the ICEMA Manual.

Station 41 – Yucca Valley

One EMS vehicle contained one medication (Epinephrine) which was 20 days past its expiration date at the time of inspection, and was not removed from the vehicle as required by the ICEMA Manual.

Station 302 – Hesperia

- The minimum medication inventory levels were not maintained in 3 out of 3 EMS vehicles (MA302/MA302A – 1 medication & ME 302 – 5 medications) inspected as required by the ICEMA Manual.
- One EMS vehicle contained one medication (5 vials of Atrovent) which was 6 days past its expiration date at the time of inspection, and was not removed from the vehicle as required by the ICEMA Manual.

Station 305 – Hesperia

The minimum medication inventory levels was not maintained in 1 out of 3 EMS vehicles (ME305 – 2 medications) inspected as required by the ICEMA Manual.



Although the department was aware of the ICEMA Manual, there were instances when vehicles responded to several calls and the assigned paramedic was not able to restock the medication during their shift. The Department does not have a policy for periodic inspections of medications to ensure that the vehicles carry the required minimum amount of medications. EMS vehicles carrying expired medications and medications that are below the minimum quantities could compromise the ability of the paramedics to administer appropriate care to a patient.

Recommendation:

We recommend the Department to periodically inspect and remove medications which are expired in the EMS vehicles. We further recommend the Department implement regular inventory counts and inspections of medications in the vehicles to ensure medications are maintained within the mandatory requirements of the ICEMA Manual.

Management's Response:

To minimize or eliminate disparities in levels of medication required by the ICEMA, San Bernardino County Fire District (SBCoFD) will update Operations Directive 3540-EMS Equipment Standardization and require that all EMS Equipment required by ICEMA in Policy 7010 will be inspected on the first day of each month. A log will be maintained indicating the next drug to expire in the cache of each piece of apparatus. A Department-wide education will be developed and issued to all First Responders on the on-line education platform "Target Solutions".

Auditor's Response:

The Department's planned actions will correct the deficiencies identified in the finding.



Finding 2: Recordkeeping and monitoring controls over controlled substances need improvement.

The Drug Enforcement Administration (DEA) Diversion Control Division Practitioner's Manual Section IV, Recordkeeping Requirements Inventory states that each registrant who maintains an inventory of controlled substances must maintain a complete and accurate record of the controlled substances on hand and the date that the inventory was conducted. This record must be in written, typewritten, or printed form and be maintained at the registered location for at least two years from the date that the inventory was conducted. Each inventory must contain the following information:

- Whether the inventory was taken at the beginning or close of business
- Names of controlled substances
- Each finished form of the substances (e.g., 100 milligram tablet)
- The number of dosage units of each finished form in the commercial container (e.g., 100 tablet bottle)
- The number of commercial containers of each finished form (e.g., four 100 tablet bottles)
- Disposition of the controlled substances

The ICEMA Policy, Procedure and Protocol Manual Reference no. 7030 "Controlled Substance Policy" states that all controlled substances shall:

- Be purchased and stored in tamper evident containers
- Be stored in a secure and accountable manner
- Be kept under a "double lock" system at all times
- Be reconciled at a minimum every 24 hours or at any change of shift or change in personnel.

San Bernardino County Fire District (SBCoFD) Operations Directives no. 3640 "Controlled Substance Policy" III, Procedure Section D states that at the start of every shift or at any time a Paramedic (EMT-P) with controlled substance responsibility is relieved, the outgoing and incoming EMT-P shall confirm that the Narcotics (NARC) Box Inventory Control (ICT) Tag is in place, intact and coincides with the Daily Controlled Substance Inventory (CSI) log. The incoming and outgoing EMT-P shall inventory the controlled substances and sign the Daily CSI log. The policy also states that if there is no incoming EMT-P, the on-duty station captain or immediate supervisor shall perform the above procedures with the on-duty EMT-P.



The following conditions were identified when we reviewed the CSI log for September and October 2019:

Station 14 – Wrightwood

- The captain or supervisor did not perform an inventory of the controlled substances in all instances when there was no incoming EMT-P.
- There were two days where the name of the incoming EMT-P and controlled substance quantity were not documented.

Station 25 – Crestline

- The captain or supervisor did not perform an inventory of the controlled substances in all instances when there was no incoming EMT-P.
- There were five days where the controlled substance quantity, ICT Tag number and name of outgoing EMT-P were not documented.

Station 41 – Yucca Valley

- The Captain or supervisor did not perform an inventory of the controlled substance in all instances when there was no incoming EMT-P.
- There were six days where the controlled substance quantity and name of the outgoing EMT-P were not documented.

Station 302 – Hesperia

The Captain or supervisor did not perform an inventory of the controlled substances in all instances when there was no incoming EMT-P.

Station 305 – Hesperia

- The captain or supervisor did not perform an inventory of the controlled substances in all instances when there was no incoming EMT-P.
- There were three days where the quantity of the controlled substance that was used was not subtracted from the running balance of the CSI log, therefore there was not a complete and accurate record of controlled substances on hand.
- There were six days where the ICT tag number was not recorded correctly.

Although policy requires that controlled substances are reconciled, at a minimum, every 24 hours or at any change of shift or change in personnel, there is no internal policy requiring the appropriate supervisor to conduct periodic monitoring or review of the logs to ensure compliance by the paramedic unit. Lack of monitoring and oversight over inventory counts of controlled substances increases the risk of errors or missing drugs going undetected. Improper documentation of records could lead to inaccurate balances and non-conformance to federal guidelines, such as Title 21 United States Code (USC) Controlled Substance Act (CSA).



Recommendation:

We recommend the controlled substance inventory log is reviewed and signed by the captain or immediate supervisor when there is no incoming paramedic on duty. We further recommend the Department provide training to staff on proper documentation, reconciliation and inspection of controlled substance to ensure compliance with the Department policy. We also recommend the Department update its policies and procedures, to include periodic monitoring as well as a defined frequency for the review of the CSI log, and identify the appropriate position responsible for such oversight. Lastly, we recommend that evidence of the reconciliation and review be maintained.

Management's Response:

SBCoFD Operations Directive 3640, Controlled Substance Policy requires that all controlled substances are to be inventoried daily. The Operations Directives states that "At the start of every shift (or anytime an EMT-P with controlled substance responsibility is relieved) the outgoing and incoming EMT-P shall confirm that the Narc Box ICT is in place, intact, and coincides with the Daily CSI Log. The incoming and outgoing EMT-P shall inventory (viewing from outside the Narc Box) the controlled substances and sign the Daily CSI Log. If there is any question regarding the status of the controlled substance the ICT shall be removed and the controlled substance examined by both the outgoing and incoming EMT-P and a new ICT placed and documented on the Daily CSI Log. If there is no incoming EMT-P, the on-duty station Captain or Immediate Supervisor shall perform the above procedures with the on-duty EMT-P."

A Department wide education has been developed and distributed to all first responders responsible for the maintenance and security of controlled substances. In addition, the SBCoFD has purchased a narcotic inventory control system that will require daily checks by a supervisor. The system is an approved and verified DEA system that will eliminate the need for paper logs. Each day the EMS Nurse assigned to each division will have immediate access to verify that each piece of apparatus had its daily controlled substance check. Each time a narcotic is dispensed in the course of patient care, there will be an online notification to the assigned EMS Nurse. In addition, this system provides a constant accounting of all narcotics, from acquisition from the vendor to administration to the patient. Full implementation of this system will be realized by January 2021.



Auditor's Response:

The Department's actions and planned actions will correct the deficiencies identified in the finding.

Finding 3: Documentation of controlled substance usage needs improvement.

San Bernardino County Fire Protection District Operations Directives no. 3640 "Controlled Substance Policy" III, Procedure Section E states that if the ICT tag is broken during the course of patient care and a controlled substance was administered to a patient, the EMT-P assigned to the paramedic unit shall document the usage of controlled substances on the Daily CSI log as soon as possible.

The ICEMA Policy, Procedure and Protocol Manual Reference no. 2030-10 "Minimum Documentation Requirements for Transfer of Patient Care" states that first responders must complete the mandatory fields of the Electronic Patient Care Report (ePCR), which is used to create monthly controlled substance reports, prior to transferring care of a patient to a transporting agency whether using paper or electronic documentation. All medications and procedures should be documented, including attempts with times done prior to transfer. The narrative should be written if there is time or shall be given verbally to the next provider. Other fields should be completed if possible or if the fields pertain to the chief complaint.

The following conditions were identified when we reviewed the CSI log for September and October 2019:

Station 41 – Yucca Valley

- There were three days where the controlled substances used were not documented with the ePCR number.
- In one instance, there was an inconsistency identified whereby the CSI log did not agree to the monthly controlled substance report. When the controlled substance was administered, this was documented only in the narrative portion of the ePCR, rather than being properly documented in the medications column of the report.



Station 302 – Hesperia

There were three days where the controlled substances were not documented with the ePCR number.

Although the Department has processes and policies which are designed to address the documentation requirements of controlled substances, the paramedic unit did not consistently follow the policies by recording the usage of controlled substances when administered or shortly thereafter. Errors and omissions in the controlled substance daily CSI log could result in loss or abuse.

Recommendation:

We recommend the Department routinely provide level setting training to staff on accountability and recording of controlled substances. We further recommend the Department implement automated controls in the EPCR software, which would not allow required fields to be left blank. We also recommend that management perform periodic monitoring over the administration of controlled substances, which includes reconciling CSI logs to the monthly controlled substance reports and requiring the station captain to sign the CSI log.

Management's Response:

SBCoFD Operations Directive 3640, Controlled Substance Policy requires that all controlled substances are to be inventoried daily. The Operations Directives states that "At the start of every shift (or anytime an EMT-P with controlled substance responsibility is relieved) the outgoing and incoming EMT-P shall confirm that the Narc Box ICT is in place, intact, and coincides with the Daily CSI Log. The incoming and outgoing EMT-P shall inventory (viewing from outside the Narc Box) the controlled substances and sign the Daily CSI Log. If there is any question regarding the status of the controlled substance the ICT shall be removed and the controlled substance examined by both the outgoing and incoming EMT-P and a new ICT placed and documented on the Daily CSI Log. If there is no incoming EMT-P, the on-duty station Captain or Immediate Supervisor shall perform the above procedures with the on-duty EMT-P."



A Department wide education has been developed and distributed to all first responders responsible for the maintenance and security of controlled substances. In addition, the SBCoFD has purchased a narcotic inventory control system that will require daily checks by a supervisor. The system is an approved and verified DEA system that will eliminate the need for paper logs. Each day the EMS Nurse assigned to each division will have immediate access to verify that each piece of apparatus has had its daily controlled substance check. Each time a narcotic is dispensed in the course of patient care, there will be an online notification to the assigned EMS Nurse. In addition, this system provides a constant accounting of all narcotics, from acquisition from the vendor to administration to the patient. Full implementation of this system will be realized by January 2021.

At this time, we are unable to change any aspect of the ePCR system as it is maintained by ICEMA. However, re-education on ICEMA Policy 2030 will be addressed in the Controlled Substance refresher that will be posted on Target Solutions.

Auditor's Response:

The Department's actions and planned actions will correct the deficiencies identified in the finding.

Finding 4: Access to controlled substances needs improvement.

San Bernardino County Fire Protection District Operations Directives 3640 "Controlled Substance Policy" III Procedure Section B states that only the EMT-P on duty assigned to the paramedic unit shall access the controlled substances during the course of the shift. The assigned EMT-P must be in possession of the controlled substances at all times during the course of their shift. Possession includes the physical possession of the controlled substances on any vehicle or stored in the equipment to which the EMT-P is assigned. Responsibility for the security of controlled substances is relinquished only when the controlled substances are transferred to another EMT-P at shift change, when relieved from duty or if controlled substances are secured at the division storage station.



Station 302 and Station 305 – Hesperia

The key to the EMS vehicle is under the custody of the Emergency Medical Technician (EMT) instead of the EMT-P on duty.

The Department is experiencing difficulty enforcing its policy due to nature of work environment. Emergency services staff frequently need to respond to situations which require immediate action and the EMT-P is not immediately available.

The risk of drug misappropriation or loss is increased when custody or access to controlled substances is not properly maintained.

Recommendation:

We recommend the Department limit physical access to controlled substances to the EMT-P on duty who is assigned to the paramedic unit during the course of the respective shift, as required by the San Bernardino County Fire Protection District Operations Directives.

Management's Response:

The SBCoFD respectfully disagrees that the EMT-P should be in possession of the keys that maintain the apparatus (ambulance). The EMT assigned to the apparatus is a licensed person who has undergone an intense background investigation that verifies the integrity of the individual. To ensure that policy indicates the work environment a change will be made to Operations Directive 3640 that indicates the keys to the vehicle will be maintained by the EMT under the direction of the EMT-P assigned to the vehicle. The SBCoFD has no history or instances of misappropriation of controlled substances by an EMT.

Auditor's Response:

The Department has assumed the potential risk involved and the final decision regarding the implementation of the recommendation remains with the Department.