

# Report No. 51 of the Director of Audit — Chapter 4

## EMERGENCY AMBULANCE SERVICE

### Summary

1. The Ambulance Command of the Fire Services Department (FSD) is responsible for the provision of the emergency ambulance service, comprising pre-hospital care, and conveyance of patients and casualties to hospitals. As at 30 June 2008, the Ambulance Command had an establishment of 131 ambulance officers and 2,298 ambulancemen, and a fleet of 252 ambulances, 4 mobile casualty treatment centres and 34 ambulance motorcycles. In 2008-09, the estimated expenditure for the emergency ambulance service is \$948 million. The Audit Commission (Audit) has recently conducted a review of the provision of the emergency ambulance service.

#### Use of the emergency ambulance service

2. *Inappropriate use of the emergency ambulance service.* The number of emergency calls increased from 421,146 in 1999 by 152,511 (36%) to 573,657 in 2007. According to the FSD's experience, some of these calls were not of an emergency nature. The use of emergency ambulance resources to handle such calls reduces the availability of the ambulance fleet for responding to patients who are in genuine need of the emergency ambulance service. In handling each emergency call, the ambulance crew manually records the information on an ambulance journey record. However, there was no assessment on the degree of urgency of the patients in the records. The FSD plans to introduce electronic ambulance journey records in early 2009. According to the Accident and Emergency Triage Categorisation System of the Hospital Authority, from 2004 to 2007, on average, 40.5% of the conveyance of patients by ambulances were classified as semi-urgent, non-urgent or unclassified cases. *Audit has recommended that the Director of Fire Services should: (a) in implementing the electronic ambulance journey records, explore the feasibility of incorporating information on the degree of urgency of patients in these records, and using these data to generate management information for drawing the public's attention to the proper use of the emergency ambulance service; and (b) step up the efforts to encourage the public's proper use of the emergency ambulance service through public education.*

3. *Effectiveness of publicity campaigns.* To promote the proper use of the emergency ambulance service, the FSD started to launch the announcements in public interest "Do not misuse ambulance service" and the ambulance service campaign in November 2005. In August 2006, the FSD reviewed the effectiveness of the publicity campaigns. Since then, no review had been conducted. According to the Good Practice Guide to Mounting Publicity Campaigns of the Information Services Department, it is necessary to conduct a review after each campaign. *Audit has recommended that the*

*Director of Fire Services should: (a) follow the Good Practice Guide of evaluating the effectiveness of the publicity campaigns and identify room for further improvement in promoting the proper use of the emergency ambulance service; and (b) use a wider range of publicity channels to enhance the effectiveness of publicity campaigns.*

## **Performance measurement**

4. ***Ambulance response time.*** Since November 1998, the FSD has adopted the performance target of answering 92.5% of the emergency calls within a target response time of 12 minutes. For the period from January to June 2008, the FSD failed to achieve the performance target. The 12-minute target response time comprises 2 minutes for activation and 10 minutes for an ambulance to travel to the scene of incident. With the implementation of the Third Generation Mobilising System (TGMS) in June 2005, ambulance resources of individual districts are flexibly deployed to answer the emergency calls in all districts to shorten the ambulances' travelling time to the scene of incident. However, the percentage of emergency calls answered within the 10-minute travelling time decreased from 91.2% in 2004 to 87.4% for the first six months of 2008. In addition, since 1999, the FSD had not conducted any review of the 12-minute target response time. *Audit has recommended that the Director of Fire Services should: (a) ascertain the reasons for the decrease in the percentage of emergency calls answered within the 10-minute travelling time despite the implementation of the TGMS; (b) introduce measures to improve the response time of ambulances; and (c) promptly conduct a comprehensive review of the response time.*

5. ***Emergency ambulance service in the New Territories Region.*** From January 2004 to June 2008, the FSD could not achieve the performance target for the emergency ambulance service in the New Territories Region. The percentage of emergency calls answered within the target response time ranged from 87.1% to 91.5%. The review, conducted by the FSD in June 2006, concluded that the emergency ambulances resources in the New Territories Region had been stretched to their limits and there was a growing demand for the emergency ambulance service in the northern part of the New Territories Region. In April 2007, the Ambulance Command was reorganised to further enhance its operational and administrative efficiency. However, after the reorganisation, the FSD still could not achieve the performance target in the New Territories East and West Division. *Audit has recommended that the Director of Fire Services should: (a) closely monitor the achievement of the performance target in the New Territories East and West Division; and (b) critically review the allocation of ambulance resources among individual divisions to ensure that the performance target is achieved in all divisions.*

## **Use of ambulance resources**

6. ***Availability of ambulances.*** To achieve the performance target, the FSD has to ensure that sufficient ambulances and ambulance crew are available for handling emergency calls. In August 2002, after taking into account sick leave, training, physical fitness assessment and other job related activities of ambulancemen, the FSD started to set the baseline daily ambulance availability (DAA) for monitoring the availability of its ambulances. As at 30 June 2008, the baseline DAA was 184 ambulances on the day shift and 100 ambulances on the night shift. From January 2007 to June 2008, the FSD could not achieve the baseline DAA for 229 days (42% of 547 days) on the day shift and 435 days

(80% of 547 days) on the night shift. Despite the implementation of a scheme in August 2007 for deploying off-duty ambulancemen to man additional ambulances to augment the DAA, from January to June 2008, the FSD could not achieve the baseline DAA for 71 days on the day shift and 124 days on the night shift. *Audit has recommended that the Director of Fire Services should: (a) review the effectiveness of the scheme in achieving the baseline DAA; and (b) ascertain the reasons for not achieving the baseline DAA on both shifts, and introduce measures to enhance the DAA.*

7. ***Urgent care fleet.*** In April 2003, the FSD introduced the urgent care fleet to release resources for the emergency ambulance service. Each urgent care ambulance is manned by a 2-man crew instead of the normal 3-man crew. Since September 2003, the FSD has a fleet of 12 urgent care ambulances. From 2004 to 2007, on average, 10.7 urgent care ambulances were available for handling urgent calls on each day. However, on average, only 6.6 (62%) of 10.7 urgent care ambulances were used to handle urgent calls. Since 2004, the number of urgent calls had remained rather stable, ranging from 34,175 to 37,192. However, the number of urgent calls handled by the urgent care fleet decreased from 9,390 in 2004 by 1,037 (11%) to 8,353 in 2007. The number of urgent calls handled by emergency ambulances increased from 19,821 in 2005 by 4,808 (24%) to 24,629 in 2007. The last review of the operation of the urgent care fleet was conducted in April 2004. *Audit has recommended that the Director of Fire Services should: (a) conduct a comprehensive review of the efficiency and effectiveness of the urgent care ambulance service, and ascertain the causes of the low utilisation of the urgent care fleet; and (b) ascertain the causes for using emergency ambulances to handle the urgent calls to ensure the efficient and effective utilisation of ambulance resources.*

8. ***Training of Emergency Medical Assistant IIs.*** Since February 2005, the FSD has committed to providing the paramedic ambulance service to improve the survival rate of critical patients and casualties for all the emergency calls. An emergency ambulance has to be supervised by an Emergency Medical Assistant (EMA II) for providing the paramedic ambulance service. If an emergency ambulance is not supervised by an EMA II, it is regarded as a floating urgent care ambulance and normally not used to provide the paramedic ambulance service. Audit noted that the FSD did not have the required number of EMA IIs to provide the paramedic ambulance service for all the emergency calls. The number of emergency calls handled by floating urgent care ambulances increased from 6,819 in 2004 by 6,537 (96%) to 13,356 in 2007. *Audit has recommended that the Director of Fire Services should assess the number of EMA IIs required for providing the paramedic ambulance service and expand the training programme to enable more ambulancemen to be trained as EMA IIs.*

## **Maintenance of ambulances**

9. ***Monitoring of unscheduled maintenance.*** From 2003 to 2007, the percentage of downtime of the ambulances maintained by the Electrical and Mechanical Services Department (EMSD) increased from 10.3% to 15%. In 2007, the downtime for unscheduled maintenance accounted for 72% of the total downtime. The significant increase in the downtime of unscheduled maintenance undermined the availability and reliability of the ambulance fleet for the emergency ambulance service. Up to 30 June 2008, the FSD had not kept management information on the breakdown and the maintenance of individual ambulances. *Audit has recommended that the Director of Fire*

*Services should: (a) closely monitor the downtime of the ambulance fleet, in particular, the downtime of unscheduled maintenance; (b) assess the impact of the breakdown of ambulances on the emergency ambulance service; (c) keep management information on the breakdown and maintenance history of individual ambulances; and (d) in consultation with the Director of Electrical and Mechanical Services, ascertain the reasons for the significant increase in the downtime of unscheduled maintenance, and introduce measures to minimise its occurrence.*

10. ***Increase in traffic accidents and breakdowns.*** The FSD maintains a database on injury compensations and the costs of repairing the ambulances involved in traffic accidents. The number of traffic accidents involving ambulances increased from 133 in 2003 by 30 (23%) to 163 in 2007. However, the FSD did not have information on the breakdown history of individual ambulances even though some breakdowns occurred when the ambulances were conveying patients or casualties to the hospitals. In view of the frequent breakdowns in July 2008, on 20 July 2008, the FSD started to keep a brief summary of the breakdowns. From 20 July to 19 August 2008, among the 67 ambulances involved in the breakdowns, 53 had been in service for over 9 years and 31 were at that time conveying patients to hospitals. The FSD did not ascertain the causes and consequences of the increase in breakdowns of ambulances. *Audit has recommended that the Director of Fire Services should: (a) conduct a comprehensive review of the causes and consequences of the increase in breakdowns, including the impact on rescue operations; and (b) introduce measures to minimise the frequency of breakdowns and enhance the availability and reliability of the ambulance fleet.*

11. ***Minimum Cost Refurbishment Programme.*** The FSD joined the Minimum Cost Refurbishment Programme (MCRP) in April 2006. Under the MCRP, the service life of an ambulance is extended for two years beyond its design serviceable life at a cost of 10% to 20% of the original acquisition cost. Up to 30 June 2008, the average downtime of the eight ambulances under the MCRP was 12.4%. Since November 2007, the FSD had not evaluated the effectiveness of using the eight refurbished ambulances under the MCRP. *Audit has recommended that the Director of Fire Services should critically review the effectiveness and efficiency of using refurbished ambulances under the MCRP for maintaining the availability of ambulances, taking into account the breakdown and maintenance history of individual ambulances, in particular, the risk of breakdown on rescue operations.*

12. ***Monitoring of scheduled maintenance.*** Under the Service Level Agreement (SLA), the EMSD is required to maintain the availability of FSD ambulance fleet at 92% after taking into account the downtime for scheduled maintenance in EMSD workshops. Audit noted that the guaranteed level of availability was only applicable to ambulances in service not exceeding seven years. On the commencement of the SLA (i.e. 1 April 2006), 147 (60%) of the 246 ambulances at that time had already exceeded their design serviceable life of seven years (i.e. aged ambulances). However, no target availability was set for these aged ambulances. *Audit has recommended that the Director of Fire Services should: (a) set a target availability for these aged ambulances; and (b) closely monitor the performance of the maintenance service provided by the EMSD under the SLA.*

## **Procurement of replacement and additional ambulances**

13. ***Ageing ambulance fleet.*** As at 30 June 2008, 244 ambulances, excluding the 8 ambulances under the MCRP, had been in service, on average, for 8.1 years. The average age of the FSD ambulance fleet increased from 5.36 years in 2003 to 7.61 years in 2007. The number of aged ambulances increased from 23 in 2003 by 6.7 times to 178 in 2007. The significant increase in aged ambulances is probably one of the reasons for the increase in the downtime due to sudden breakdowns of ambulances. However, the FSD did not keep management information on the breakdown and maintenance history of individual ambulances. It was difficult for the FSD to justify the replacement of its aged ambulances. *Audit has recommended that the Director of Fire Services should: (a) provide comprehensive management information on the breakdown and maintenance history of the ambulances to substantiate the request for their replacement; (b) review the methodology of determining the number of ambulances to be replaced; and (c) conduct a comprehensive review of the serviceability of the ambulance fleet.*

14. ***Lead time for the replacement of ambulances.*** According to FSD records, it takes about three to four financial years to complete the process of replacing an ambulance. Audit noted that 83 out of the 88 ambulances, approved for replacement in 2007-08, had been in service, on average, for 9 years. At the time of the delivery of replacement ambulances, these 83 ambulances will have been in service, on average, for about 11 years. *Audit has recommended that the Director of Fire Services should, in consultation with the Director of Electrical and Mechanical Services and the Director of Government Logistics, consider expediting the replacement process.*

15. ***Additional ambulances for the projected increase in emergency calls.*** Since 2001, the FSD, based on the ratio of ambulances to emergency calls recommended in the consultancy report of December 2001, had estimated the number of additional ambulances required for the projected increase in emergency calls and bid funds under the Non-works Capital Expenditure Resource Allocation Exercise. However, this ratio, which was based on data in 2000, might no longer be applicable. From 2005 to 2007, having considered all relevant factors, the Government Logistics Department did not support the FSD's proposals for the procurement of additional ambulances. *Audit has recommended that the Director of Fire Services should: (a) review the existing methodology of estimating the number of additional ambulances for the projected increase in emergency calls; (b) conduct a comprehensive review on the availability and utilisation of ambulances; and (c) provide comprehensive management information on the availability and utilisation of the ambulance fleet to substantiate the request for the procurement of additional ambulances for the projected increase in emergency calls.*

## **Response from the Administration**

16. The Administration agrees with the audit recommendations.

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