

**For discussion  
on 8 July 2014**

## **Legislative Council Panel on Security**

### **Development of Computer System for Provision of Post-dispatch Advice in the Fire Services Department**

#### **PURPOSE**

This paper consults the Panel about the Fire Services Department's (FSD) proposal to develop a computer system for the provision of post-dispatch advice (PDA) in the handling of emergency ambulance calls.

#### **BACKGROUND**

2. To enhance its emergency ambulance services (EAS), FSD has been providing PDA to EAS callers in respect of three common types of injury, including general bleeding, burns and dislocation/fracture of limbs, since 1 May 2011. The advice includes simple first-aid advice (such as cooling burn wounds with water and applying pressure to a bleeding wound with clean towel) and time-saving advice (such as reminding the caller to bring along the patient's medications and consultation summaries for doctors' reference at the Accident and Emergency Department). The FSD began to provide advice on two more types of sickness, namely convulsion and heat exposure, from 1 June 2012, and on hypothermia from 1 January 2013.

3. Under the existing arrangement, operators of the Fire Services Communication Centre (FSCC) will dispatch an ambulance immediately after obtaining information on the location of the incident and the nature of injury or sickness. If the nature of the ambulance call falls within the six types of easily identified injury/sickness mentioned above, the FSCC operator will call back the caller to provide PDA<sup>1</sup>.

4. The FSD successfully provided simple PDA to about 17 700 callers from May 2011 to May 2014. FSD conducted telephone survey to around 9 700 callers afterwards. Over 99% of the respondents were satisfied with

---

<sup>1</sup> The FSD does not provide PDA to callers, such as children and the elderly, who are unable to comprehend or follow the advice. The callers may also choose not to receive the PDA.

the PDA provided by FSD and considered that it was helpful to callers and patients. They also agreed that FSD should continue to provide PDA to callers in future. In view of the favourable responses from the public, FSD plans to continue the provision of PDA and work on its further expansion for the purpose of further enhancing the EAS.

## **PROPOSED DEVELOPMENT OF THE COMPUTER SYSTEM**

5. FSD proposes to develop a computer system that incorporates an internationally-accredited questioning protocol software to assist the FSCC operators in identifying various conditions of injuries and sicknesses, thereby providing callers of EAS with more comprehensive and appropriate PDA that helps stabilise patients' conditions. The existing next-in-queue mode of ambulance dispatch and the relevant performance pledge<sup>2</sup> will remain unchanged.

6. The proposed computer system will assist FSCC operators to ask callers questions following the questioning protocol to systematically obtain information on patients' conditions. Through immediate analysis, operators can provide detailed and appropriate PDA to callers and guide them to render assistance to patients. The PDA will cover over 30 types of injury/sickness (**Annex**), including physical trauma, loss of consciousness, cardiac arrest, emergency childbirth and shortness of breath etc., basically covering all types of injury/sickness dealt with by FSD in its daily handling of EAS calls. Apart from the conditions which are more easily identified, such as the handling of bleeding wounds and fractured limbs, the PDA will also cover those more complicated/life-threatening cases (e.g. instructing the caller to perform cardiopulmonary resuscitation and/or use the Automated External Defibrillator on a patient with cardiac arrest, assist a pregnant woman in an emergency childbirth and handle a patient with an obstructed airway, etc.).

## **OPERATIONAL FLOW**

7. To ensure that the mobilisation of ambulances will not be affected by the provision of PDA, the procedures of taking calls and dispatching resources will be taken up by two individual operators performing the roles of call-taker and dispatcher respectively. Once a call-taker confirms the location of an incident and the nature of a call, the computer system will instantly transmit information and dispatch instructions to a dispatcher for the immediate dispatch of ambulances. Meanwhile, the call-taker will maintain

---

<sup>2</sup> The FSD's performance pledge at present is that in 92.5% of all emergency ambulance calls, ambulances should be able to arrive at the scene within a response time of 12 minutes.

communication with the caller on the phone and raise a set of pre-structured questions according to the questioning protocol in the system in order to ascertain the patient's conditions, thereby giving appropriate PDA to the caller. The pre-structured questions under the questioning protocol are simple and easy to understand, requiring the caller to mainly answer "yes" or "no". Callers may decide on their own whether to listen and follow the advice provided by the call-taker.

8. There will be no delay in the process of dispatching an ambulance as the dispatching and questioning processes will be taken up by two individual operators. The call-taker, when necessary, may send information about the patient's conditions to the ambulance en route to the incident scene via the system so that the ambulance crew can get an early understanding of the patient's conditions and get prepared.

9. The questioning protocol incorporated in the proposed computer system is developed by the International Academies of Emergency Dispatch (IAED)<sup>3</sup> and has been clinically approved. Similar computer systems and questioning protocols are adopted by some 3 000 communication centres from over 40 countries/regions, including the United States, Canada, the United Kingdom, France, Italy, Germany, Australia, New Zealand, Malaysia and the Mainland.

## **ANTICIPATED BENEFITS**

10. The proposed computer system is expected to bring about the following benefits:

- (a) Providing immediate assistance to callers in rescuing lives

With the computer system, the FSD will be able to provide PDA on more than 30 types of injury and sickness, basically covering all types of injury and sickness in the daily handling of emergency ambulance calls by FSD. The PDA will help reduce the potential risks arising from wrong treatment given by members of the public without the proper knowledge, and help stabilise or improve patients' conditions.

---

<sup>3</sup> The IAED is a non-profit making and standard-setting institution, promoting safe and effective emergency dispatch services world-wide. Its status as a standard-bearer in the field has been recognised by professional organisations such as the American Heart Association, the American College of Emergency Physicians and the American Medical Association.

(b) Alleviation of distress in patients and callers

If a caller is given appropriate advice while awaiting an ambulance, it helps alleviate anxiety and distress in both the patient and the caller.

(c) Allowing for better preparation of ambulance crew

FSCC's call-takers, when necessary, will send information gathered about patients' conditions to frontline ambulance crew who are on their way to the scene of an incident, so that they can make early preparation for the immediate provision of appropriate treatment to the patients upon arriving at the incident scene.

(d) Facilitating review and formulation of EAS strategies

The proposed computer system will enable the FSD to comprehend and analyse information concerning the EAS, such as the nature of the EAS calls, patient's conditions, geographic distribution and times of occurrence, more systematically and accurately. Such information will facilitate FSD to review and formulate long-term planning strategies in respect of the EAS and ambulance deployment.

## **DEPARTMENTAL TRAINING AND PUBLICITY**

11. To ensure the service quality, the FSD will arrange structured training for all FSCC operators. Operators must attend and complete the internationally-accredited Emergency Medical Dispatcher Certification Course as required by the IAED, and must complete recertification at regular intervals. The FSD will set up an internal group responsible for matters of quality assurance to ensure the PDA quality. The FSD Medical Director will also revise the questioning protocol where appropriate to cater for the needs of the local culture and language environment.

12. In the past year, FSD has consulted different bodies, including organizations of patients, the elderly, emergency services and medical professionals, on the proposed computer system. They generally support the proposal. Before the system is put into operation, the FSD will spare sufficient time to launch an extensive public education programme to enhance the understanding of PDA by members of the public, especially elderly groups and patient organisations. Publicity activities will also be

organised, which will include demonstrations featuring callers being questioned as well as how callers should respond to questions from operators, etc.

## **FINANCIAL IMPLICATIONS**

### Non-recurrent Expenditure

13. We estimate that the procurement and development of the proposed computer system will incur non-recurrent expenditure of \$37.88 million, the breakdown of which is as follows:

	<b><u>Item</u></b>	<b>(\$'000)</b>
(a)	Computer Hardware	4,406
(b)	Computer Software	14,780
(c)	Implementation of Services (e.g. integration with the existing system)	5,550
(d)	Security Risk Assessment and Audit	250
(e)	Contract Staff	2,700
(f)	Training	6,750
(g)	Contingency	3,444
	<b>Total:</b>	<b>37,880</b>

It is estimated that the required expenditure for 2014-15, 2015-16, 2016-17 and 2017-18 will be about \$248,000, \$9,236,000, \$18,705,000 and \$9,691,000 respectively.

### Recurrent Expenditure

14. We estimate that an annual recurrent cost of \$14.36 million mainly for the repair and maintenance of the computer system and other operational expenses will be required from 2018-19 onwards.

## **IMPLEMENTATION TIMETABLE**

15. Subject to Members' views on the proposal, we plan to seek funding approval from the Finance Committee of the Legislative Council in end-2014. If the funding is approved, the project implementation plan will be as follows:

<u>Item</u>	<u>Target Completion Date</u>
(a) Tender preparation	July 2015
(b) Tendering and award of contract	July 2016
(c) System analysis and design	January 2017
(d) User acceptance test and in-house training	July 2017
(e) System live-run	August 2017

**ADVICE SOUGHT**

16. Members are invited to comment on the proposal.

**Security Bureau  
Fire Services Department  
June 2014**

**Conditions of injuries and sicknesses covered  
by the proposed computer system**

1. Abdominal pain / problems
2. Allergies (reactions) / envenomations (stings, bites)
3. Animal bites / attacks
4. Assault / sexual assault
5. Back pain (non-traumatic or non-recent trauma)
6. Breathing problems
7. Burns (scalds) / explosion (blast)
8. Carbon monoxide / inhalation / hazmat / Chemical, Biological, Radiological and Nuclear
9. Cardiac or respiratory arrest / death
10. Chest pain (non-traumatic)
11. Choking
12. Convulsions / seizures
13. Diabetic problems
14. Drowning (near) / diving / scuba accident
15. Electrocution / lightning
16. Eye problems / injuries
17. Falls
18. Headache
19. Heart problems / Automatic Implanted Cardiac Defibrillator
20. Heat / cold exposure
21. Hemorrhage / laceration
22. Inaccessible incident (non-vehicle)
23. Overdose / poisoning (ingestion)
24. Pregnancy / childbirth / miscarriage
25. Psychiatric / abnormal behaviors / suicide attempt
26. Stab / gun shot / penetrating trauma
27. Stroke (Cerebrovascular Accident )
28. Traffic / transportation incidents
29. Traumatic injuries
30. Unconscious / fainting (near)
31. Unknown problem (man down)
32. Health Care Professional Admission
33. Pandemic / Epidemic / Outbreak (Officially Enacted Triage)