Ambulance Services: Medical Priority Dispatch System

Consultation Document

July 2009

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Content

Chapter One: Background

Introduction

1.1 This document outlines the Government's proposal on the implementation of a Medical Priority Dispatch System (MPDS) for the dispatch of ambulances in Hong Kong. The primary objective of the proposal is to enhance the existing emergency ambulance service by providing quicker response to people in greatest need.

Existing Dispatch System of Emergency Ambulance Services

1.2 Pursuant to sections 7(d) and (e) of the Fire Services Ordinance (Chapter 95 of the Laws of Hong Kong), the Fire Services Department (FSD) is responsible for, among other things, assisting any person who appears to need prompt or immediate medical attention and conveying him to a hospital or other place where medical attention is available. To fulfill this responsibility, FSD has about 2 400 ambulance personnel and operates about 188 emergency ambulance shifts during day time and about 100 shifts over the night. All emergency ambulance calls are answered by the Fire Services Communications Centre (FSCC). In 2008, FSCC received some 600 000 emergency ambulance calls, or about 1 640 calls a day on average.

1.3 Under the current ambulance dispatch system, when an emergency ambulance call reaches the FSCC, the operator will follow a simple questioning protocol, as set out in Table 1. The main purpose of the questioning protocol is to obtain the basic call information, such as the location of the patient and the nature of his sickness or injury. The information is used by the ambulance crew in deciding the type of ambulance aid or equipment that should be brought to the scene.

Table 1

Current questioning protocol
1. *Please give me the address.* (*Which street/block? What is the district? Which house number? Which floor? Which flat? What is the name of the building?*)

Current questioning protocol
2. *Could you please tell me the nature of the sickness / injury, e.g. road accident, industrial accident, assault, infectious diseases, maternity, etc.?*
3. *Could you please tell me the condition of the patient, e.g. whether the patient is conscious, any medical history such as heart disease, diabetes or asthma?*

1.4 The operator will dispatch the nearest available ambulance after the call has ended. This is made simply on a next-in-queue basis, irrespective of the nature of the sickness or injury. FSD has adopted a response time target of 12 minutes for all emergency calls since 1998, with the performance pledge of achieving the target in 92.5% of the calls. The response time performance achieved in the past three years (i.e. in 2006, 2007 and 2008) and in the first four months of 2009 were 92.7%, 92.8%, 92.2% and 93.5% respectively.

Current Problems

1.5 There are problems with the existing dispatch system. Firstly, there is no established mechanism to assist FSCC operators in assessing the degree of urgency of incoming calls. The dispatch is made on a next-in-queue basis. No priority is given to patients in critical or life-threatening conditions. If a call from a non-acute patient was followed by another call involving a patient with critical conditions in the vicinity, FSCC operators will dispatch the first available ambulance to the patient who called first, with the next available ambulance attending to the second call. In the event that a second ambulance is not immediately available, there is presently no mechanism to re-assign the first available ambulance to the nearby second patient who is in more urgent need of assistance.

1.6 Secondly, valuable ambulance resources are not effectively targeted to those in greatest need. Under the existing dispatch system, all emergency ambulance calls are treated with the same priority, and the same response time target of 12 minutes with 92.5% compliance applies across the board. Nevertheless, the degree of urgency of ambulance calls varies widely – there are calls involving patients in life-threatening conditions (e.g. a heart attack) on one end of the spectrum, and calls from people with very minor complaints (e.g. itchy skin) on the other end. The current system does not prioritise calls and handle them in accordance with their degree of urgency.

Focal Question (1): Do you agree that there is room for improvement in the existing ambulance dispatch system?

Chapter Two: Policy Considerations and Proposal

Considerations

2.1 The Government is committed to providing effective and efficient emergency ambulance services for everyone who needs to be conveyed to a hospital as soon as possible. While the existing next-in-queue dispatch system is commonly used in most Asian countries and the performance of our ambulance service compares favourably with most overseas standards, we note that advanced ambulance services in over 20 countries have already adopted a priority dispatch system to prioritise their response to ambulance calls in accordance with their degree of urgency. We consider that there is scope for introducing MPDS in Hong Kong with a view to facilitating priority response to critical or life-threatening cases.

Providing Quicker Response to Those in Greatest Need

2.2 The proposed MPDS helps differentiate the nature of sickness or injury, accords a quicker response to the more critical patients, and thus enhances the quality of emergency ambulance services. By providing speedier response to patients in critical or life-threatening conditions, we can make effective use of the valuable ambulance resources, and enable people in greatest need to receive timely pre-hospital medical treatment at the scene and during emergency transport to a hospital. It is clear that a person who is unconscious should be conveyed to a hospital more immediately than a person who suffers minor skin problems. Similarly, a person who suffers a major bone fracture should be given priority over a person who suffers from minor limb injuries.

Overseas Practices

2.3 In considering the proposal for a possible introduction of MPDS in Hong Kong, we have made reference to the good practices of advanced ambulance services overseas (including cities in Australia, Canada, the United Kingdom and the United States), which have adopted a priority dispatch system to categorise calls and handle them in accordance with their degree of urgency. Most countries or cities adopt a response time target of 8 to 10 minutes for the most critical cases, and a longer response time target for the non-acute calls. For instance, Toronto's response time target for life-threatening emergencies is 9 minutes with 90% reliability. In London, the standard for the most critical emergency calls is

8 minutes with a 75% compliance requirement. For Queensland, the target is to handle 68% of emergency cases in 10 minutes. On the other hand, for non-acute calls, Toronto sets a target of 21 minutes for 90% of these cases, while London and Queensland have not set any target for cases which are neither serious nor life-threatening. More examples of the response time targets of overseas ambulance services are provided in **Annex A**.

Proposal

2.4 In order to enhance the emergency ambulance service in Hong Kong, and to be on a par with the good practices adopted by advanced ambulance services overseas, we propose that we should introduce MPDS in Hong Kong to prioritise response to emergency ambulance calls in accordance with the degree of urgency. The proposed categorisation and response time targets are set out in Table 2 below.

Table 2

Response Level	Degree of Urgency	Target Response Time	Response Time Achievement
Response 1	Critical or life-threatening	9 minutes	92.5%
Response 2	Serious but non-life-threatening	12 minutes	92.5%
Response 3	Non-acute	20 minutes	92.5%

2.5 Details of the broad dispatch framework will be discussed in Chapter 3.

Focal Question (2): ***Do you agree that ambulance response should be prioritised in accordance with the degree of urgency of the calls?***

Chapter Three: The Broad Dispatch Framework

Receiving a Call

3.1 Under the proposed MPDS, a set of structured questions will be asked to solicit the essential information from the caller. The MPDS questioning protocol, as outlined in Table 3 below, is designed to identify a potentially life-threatening situation readily. The most obvious and critical cases can be identified as early as the third entry question and an ambulance will be dispatched immediately. According to overseas experience, it will only take around 15 to 20 seconds on average for the operator to ascertain the condition of a patient and assign the appropriate ambulance response. Whilst the ambulance is travelling on the road to the patient, the operator will continue to ask the caller a few more questions to obtain additional specific details about the sickness or injury, which will be relayed to the ambulance crew en-route to better prepare them for the emergency service required.

Table 3

Entry questions under the Proposed MPDS
1. What's the address of the emergency?
2. What's the phone number you're calling from?
3. What's the problem? Tell me exactly what happened.
4. How old is the patient/injured?
5. Is the patient conscious?
6. Is the patient breathing?
****
Depending on the nature of sickness or injury, additional specific questions may be asked by the operator, for example:
a. Which part of the body is injured?
b. Is there any serious bleeding?
c. Is the patient able to talk?

3.2 The MPDS questioning protocol is based on a clinically supported framework endorsed by the International Academy of Emergency Dispatch (IAED)[1], with modifications to be made by medical professionals to suit the local culture and language environment. The questions will be phrased in simple and laymen language and mainly close-ended. In order to ensure that the questions are effective and easy to understand, FSD will seek the advice of medical experts from relevant fields to fine-tune the wording before implementation to enhance ready understanding and facilitate effective response by the callers.

Categorisation and Dispatch

3.3 Incoming emergency ambulance calls will be divided into three response modes to facilitate easier understanding by the public (Table 4). The categorisation will be based on the urgency of a patient's medical conditions as reflected by the caller's response to the protocol questions.

Table 4

Response Mode	Degree of Urgency
Response 1	Critical or life-threatening
Response 2	Serious but non-life-threatening
Response 3	Non-acute

3.4 Calls justifying a higher response mode would be given priority over calls otherwise. In a situation where there is no readily available ambulance that can attend to a call of a higher response mode (e.g. Response 1) within the target response time, the operator would be prompted by the system to re-assign an ambulance already dispatched to handle a call of a lower response mode to respond to the call of the higher response mode in the vicinity. The operator will then send another ambulance which may be further away to attend to the call of the lower response mode. However, in any case, the operator will strive to fulfill the performance pledge for all the calls irrespective of their response mode.

[1] The IAED is a non-profit standard-setting institution promoting safe and effective emergency dispatch services world-wide. Its status as a standard-bearer is recognised by established expert organisations such as the American Heart Association etc.

3.5 In the event that the caller is not able to give clear or specific responses to the protocol questions, the operators would adhere strictly to the overriding principle of ***"if in doubt, dispatch immediately"***, i.e. they will choose to err on the safe side and classify an uncertain call as a Response 1 call and send an ambulance to the scene as soon as possible.

Response Time Targets and Performance Pledge

3.6 As for the performance pledge, we propose to maintain the current pledge of achieving the response time target in 92.5% of the cases for all the calls. To facilitate better focus of resources for the critical or life-threatening cases, we propose to adopt a different response time target for each of the three response modes such that the level of ambulance response would be commensurate with the degree of urgency of the categorised emergency ambulance calls.

3.7 When compared to the existing single pledge system, the response time target of Response 1 calls is proposed to be reduced from 12 minutes to **9 minutes** to provide speedier response to patients in critical or life-threatening conditions. For Response 2 calls, we propose to maintain the current response time target of **12 minutes** for serious but non-life-threatening cases. These proposed response time targets would put Hong Kong on a par with the standards adopted by most advanced ambulance services overseas.

3.8 Response 3 calls by definition are non-acute in nature. They are not time-critical and there are examples overseas (e.g. London and Australia) of not setting any response time target for Response 3 calls under the MPDS. However, to underline the Government's continued commitment to providing quality emergency ambulance services, we see merit in committing to a specific response time target and providing the public with a safety baseline for all emergency ambulance calls. Having considered the relative need of patients of Response 1, Response 2 and Response 3 calls, as well as the practices adopted overseas, we propose to pitch the response time target for Response 3 calls at **20 minutes**. The differentiation in response time should also help increase the awareness of the community about the need to use ambulance services judiciously.

Post-Dispatch Advice

3.9 The proposed MPDS will also enable the operators to provide further assistance and comfort especially to critical patients at the earliest opportunity immediately following the urgent dispatch of the nearest ambulance. The operator will stay on the line with the caller, if necessary, to provide some self-help or first-aid advice for the patient before the arrival of the ambulance crew. Such post-dispatch advice is widely practised by advanced ambulance services overseas. The advice given is specific to the nature of the patients' conditions and clinically-proven to be effective in reducing the risk of further aggravation and improving the patient's condition by appropriate intervention. Typical examples of such advice include applying direct pressure to a bleeding wound, avoiding movement of severely injured trauma patients, and other useful directions like simple treatment of burns. Further examples by response levels are tabulated below –

	Possible Post-Dispatch Advice (First Aid)	**Possible Post-Dispatch Advice (Time-saving)**
Response 1 Calls *(e.g. snake bite victim who is not alert)*	• *I'll stay on the line until help arrives.* • *Tell me when the paramedics arrive or if anything changes.* • *Stay right with him, make sure his head is tilted back, and check breathing often.* • *If he vomits, clean out his mouth and nose.* • *Keep the bitten area below heart level, if possible.* • *Do not apply ice or a tourniquet.*	• *Gather his medications and his consultation/discharge summaries (if any).* • *Have someone meet and guide the paramedics. The ambulance is on the way.*
Response 2 Calls *(e.g. heat exhaustion, patient alert but has cardiac history)*	• *Remove him from any sources of heat. Remove his outer clothing.* • *Apply cool water to his entire skin surface.*	
Response 3 Calls *(e.g. minor burns)*	• *Cool the burn for up to 10 minutes with water.*	

3.10 As shown in the examples above, the post-dispatch advice is easy to follow and can be performed by most people with little first aid knowledge. It will help reduce the risk of further aggravation and improve the patient's condition. Such advice is entirely voluntary for the callers and they have complete discretion as to whether to take or follow such advice.

Focal Question (3):	***Do you support the proposed response time targets and the performance pledge?***
Focal Question (4):	***Do you consider it useful to receive post-dispatch advice before the arrival of ambulances?***

Chapter Four: Way Forward

4.1 We will carefully consider all the comments and views received during the consultation before finalising our proposal. Subject to the public's support for the broad principles of MPDS and the dispatch framework, we propose to introduce a priority dispatch system in Hong Kong no later than 2012.

4.2 We anticipate that a lead time of about two to three years is required to better prepare the community for the changes to the existing system and to pave way for the effective implementation of the proposed MPDS. In particular, further work will be needed in the following areas :

(a) Preparedness of the community: we would step up publicity efforts to explain to the community how the proposed MPDS would operate, and assure the public that callers would be guided by operators to respond to a few essential but simple questions in order for the MPDS to better serve the more critical cases. We will also initiate extensive public education programmes in schools and different sectors of the community to facilitate more focused understanding of the benefits of the MPDS; and

(b) Training for FSD staff: effective training will be provided to FSD staff to ensure their quality service for the public upon the operation of the new dispatch system. Every FSCC staff will undergo the Emergency Medical Dispatcher Certification Course. Each should pass the certification course and be re-certified every two years. Frontline ambulance crew will also receive training to help them appreciate the improved mechanism of reassigning ambulances.

4.3 FSD will also conduct tender exercises for the procurement of software protocol and the development of necessary hardware system for the MPDS. The questioning protocol will need to be modified to suit the local culture and language environment.

4.4 In the meantime, FSD will continue to step up public education to encourage proper use of the emergency ambulance service by those in need only. This will help reinforce the message that priority should be given to ambulance calls involving critical and serious conditions. Apart from the usual launching of various educational programmes, FSD will collaborate with the Hospital Authority and other relevant organisations such as the St. John Ambulance Brigade and the

Auxiliary Medical Service to enhance public education through pamphlets, posters, road shows on public transport and school visits etc. We note that in some countries (examples in **Annex B**), ambulance services are charged to encourage more judicious use. We do not propose to introduce charges at the moment, although we would welcome views on how potential users can be encouraged to make appropriate use of our emergency ambulance services.

Focal Question (5):	***Do you have any other views to improve the emergency ambulance services and to encourage the appropriate use of ambulance services?***

Chapter Five: Summary of Proposals

Summary

5.1 The existing system is not able to assess the degree of urgency of each emergency ambulance call. No priority is given to patients in critical or life-threatening conditions. In order to enhance emergency ambulance services, we propose –

(a) To pursue the implementation of MPDS to categorise and prioritise response to emergency ambulance calls in accordance with the degree of urgency;

(b) To categorise emergency ambulance calls into three categories, namely "Response 1" calls for critical or life-threatening cases, "Response 2" calls for serious but non-life-threatening cases, and "Response 3" calls for non-acute cases;

(c) To pledge for a better response time target for critical or life-threatening cases. Specifically, we propose 9 minutes for Response 1 calls (i.e. critical or life-threatening cases), 12 minutes for Response 2 calls (i.e. serious but non-life-threatening cases), and 20 minutes for Response 3 calls (i.e. non-acute cases); and

(d) To maintain the current service pledge of achieving the new response time targets in 92.5% of the cases for all categories of calls.

Views Sought

5.2 Please send us your views and comments on the above proposals and the focal questions set out at the end of each chapter of this consultation document by mail, facsimile or email on or before **3 November 2009**:

Address : Division B
Security Bureau
6th floor, Main and East Wings,
Central Government Offices
Lower Albert Road
Hong Kong

Fax number : 2523 4171

E-mail address : mpds_consultation@sb.gov.hk

5.3 It is voluntary for any member of the public to supply his/her personal data upon providing views on the consultation document. Any personal data provided with a submission will only be used for the purpose of this consultation exercise.

5.4 The names and views of individuals and organisations which put forth submissions in response to the consultation document ("senders") may be published for public viewing after conclusion of the public consultation. This Bureau and/or FSD may, either in discussion with others or in any subsequent report, whether privately or publicly, attribute comments submitted in response to the consultation paper. We will respect the wish of senders to remain anonymous and/or keep the views confidential in relation to all or part of a submission; but if no such wish is indicated, it will be assumed that the sender can be named.

5.5 Any sender providing personal data to this Bureau in the submission will have rights of access and correction with respect to such personal data. Any requests for data access and correction of personal data should be made in writing to:

AS (Security) (SD)
6th floor, Main and East Wings,
Central Government Offices
Lower Albert Road
Hong Kong

Email Address: mpds_consultation@sb.gov.hk

Annex A

Emergency Ambulance Services in Other Cities

Country	City/Province/ State	Number of Call Categories	Categorisation of Calls	Response Time Target	Response Time Achievement
Australia	Queensland	4 (MPDS)	• Emergency Transport • Urgent Transport • Non-urgent Transport, Time Critical • Non-urgent Transport, Non-time Critical	• To meet response time within 10 minutes in 68% of Emergency Transport. • To meet response time within 17 minutes in 90% of Emergency Transport. • No target set for "Urgent Transport" and "Non-Urgent Transport".	• 67% of Emergency Transport meet the response time within 10 minutes • 90% of Emergency Transport meet the response time within 17 minutes
	Melbourne/ Victoria	3 (MPDS)	• Time critical • Acute, non-time critical • Non-acute or routine	To meet response time within 15 minutes in 90% of time critical cases.	• Response time of critical cases (50^{th} percentile): within 9 minutes • Response time of critical cases (90^{th} percentile): within 15 minutes
	New South Wales	9 (MPDS)	• P1(emergency) • P2 (urgent) • P3-P9 (non-emergency)	• To meet response time within 9 minutes 48 seconds in 50% of P1 cases. • To meet response time within 19 minutes 39 seconds in 90% of P1 cases. • No specific target for P2-P9 cases.	• Response time of P1 cases (50^{th} percentile): 9 minutes 51 seconds. • Response time of P1 cases (90^{th} percentile): 19 minutes 54 seconds.

Country	City/Province/ State	Number of Call Categories	Categorisation of Calls	Response Time Target	Response Time Achievement
United Kingdom	London	3 (MPDS)	• Immediately life - threatening • Serious • Neither serious nor life-threatening	• To meet the response time within 8 minutes in 75% of immediately life-threatening cases (for first vehicle on scene only, not necessarily a vehicle capable of transporting). • To meet response time within 19 minutes in 95% of immediately life-threatening cases (for vehicle capable of transporting). • To meet response time within 19 minutes in 95% of serious cases (for vehicle capable of transporting). • Response time for neither serious nor life-threatening cases is not measured.	• 75% of immediately life-threatening cases met the response time within 8 minutes (for first vehicle on scene only, not necessarily a vehicle capable of transporting). • 99% of immediately life-threatening cases met the response time within 19 minutes (for vehicle capable of transporting). • 84 % of serious cases met the response time within 19 minutes (for vehicle capable of transporting).
Canada	Toronto (Ontario)	5 (MPDS)	• Critical • Life-threatening • Serious • Basic life support • Non-urgent/non-acute	• To meet the response time within 9 minutes in 90% of all critical, life-threatening and serious cases • To meet the response time within 13 minutes in 90% of basic life support cases • To meet the response time within 21 minutes in 90% of non-urgent cases	Response time at 90th percentile: • Critical < 9 minutes 34 seconds • Life-threatening < 12 minutes 3 seconds • Serious < 17 minutes 10 seconds • Basic life support < 20 minutes 43 seconds • Non-urgent/non-acute < 24 minutes 51 seconds

Country	City/Province/ State	Number of Call Categories	Categorisation of Calls	Response Time Target	Response Time Achievement
USA	San Francisco	4 (MPDS)	• Critical and life-threatening • Non life-threatening • Inter-facility Transfer • Inter-facility Transfer (Non-urgent)	• Critical and life-threatening – Dispatch < 2 minutes – Travel time of transport unit < 10 minutes • Non life-threatening – Dispatch < 2 minutes – Travel time of transport unit < 20 minutes • Inter-facility Transfer – Dispatch < 2 minutes – Travel time of transport unit < 60 minutes • Inter-facility Transfer (Non-urgent) – Dispatch (no target set) – Travel time of transport unit < 4 hours.	Response time at 90th percentile: • Critical and life-threatening (for first vehicle on scene only) – Dispatch : 3 minutes 5 seconds – Overall response time : 7 minutes 38 seconds • Non life-threatening (for first vehicle on scene only) – Dispatch : 4 minutes 24 seconds – Overall response time : 18 minutes 34 seconds

Note: The above information is mainly based on available information from publications of relevant authorities or from relevant websites in June 2009.

Annex B

Examples of Charging for Overseas Ambulance Services

City	Charges
Singapore	Emergency call Free Non emergency call SGD $165
Melbourne	Emergency attendance fee Around AUD $271 Emergency attendance fee and transportation fee Around AUD $897
Toronto	Insured under Ontario Health Insurance Plan CAD $45 Not insured under Ontario Health Insurance Plan CAD $240
San Francisco	Treatment without transportation USD $260 Basic/Advanced Life Service Basic call out: USD $1,053 plus Distance travelled: USD $18 per mile
London	Free
Tokyo	Free