EMERGENCY MEDICAL DISPATCH IN LAS

All ambulance services across London are co-ordinated from one centre, and the main operations centre within that building is one large room, Central Ambulance Control. CAC is divided into two main areas: call taking and dispatching. As well as specialist desks (e.g. for dealing with vehicle breakdowns, and for overall supervisory control of CAC), the dispatch area is divided into seven sectors, each responsible for one part of the city. Each sector is under the charge of a senior emergency medical dispatcher called a Sector Controller. The sector team consists of an allocator, a role normally taken by the Sector Controller, and a team of two or three dispatchers who communicate directly with the ambulance crews. The team always includes one radio dispatcher, who maintains contact with crews who are on the road, and up to two telephone dispatchers, who communicate via landlines to crews who are on station. There are 70 stations located around the city. Together, the team at each sector desk is responsible for co-ordinating the activities of around 35 ambulances simultaneously during the day (fewer at night), operating out of about 10 stations. At busy periods, most of these vehicles will be out on a job, so at any time one allocator may be responsible for between 20 and 30 different incidents. Both telephone and radio dispatchers have additional responsibilities which we do not discuss here (such as maintaining information about vehicles that are off the road for any reason, and checking the "allocator's box" described below).

When an emergency call is received, it is automatically assigned a Computer Aided Dispatch (CAD) number, a unique designator by which the call can be uniquely referenced in subsequent processing. Each call is taken by a call taker, who takes details in a predetermined order from the caller: first, the caller's telephone number, then the address or location of the incident, then details of the incident. While talking on the telephone, they enter the call details into a computerised form. A computerised gazetteer (i.e. database of all identifiable locations in London) automatically assigns a grid reference to the location of the incident. Once the grid reference has been assigned, details of the call are automatically transmitted to the relevant sector desk, where they appear on the allocator's computer screen. The allocator works with two main screens: an overview screen on which all outstanding calls for the sector are listed, and a detail screen that gives details of one call. The allocator can flick rapidly between these screens using function keys.

As soon as an allocator starts paying attention to a new call, they are making a decision about which ambulance, or ambulances, to send to the incident. In making this decision, they take many sources of information into account; these include:

– checking that this call is a new incident (not an additional call, from a different caller, about an incident that is already being dealt with),

– assessing what kind of response the incident requires (is it a very serious incident such as cardiac arrest, which demands very rapid response, and for which a 'rapid response unit' such as helicopter, motorbike or car is the best first response? Is it a road traffic accident involving multiple vehicles, for which multiple ambulances will be needed? Is there a risk of violence, in which case the police should be called? etc.),

– assessing which is the nearest appropriate resource (e.g. ambulance, car or helicopter), and

– mentally ensuring that using particular vehicles does not leave an area under-resourced.

As soon as a decision has been made to send a particular vehicle, the allocator asks the nearest free dispatcher to contact the relevant ambulance station, unless the vehicle is already on the road (e.g. returning from a previous call), in which case the radio operator contacts the crew.

From this point on, the dispatch system transfers from being computer-supported to being paper-based. As soon as the call-taker has completed the call, or occasionally earlier if they

are staying on the line to the caller to give advice on patient care, they mark the call as ‘complete’, at which point a paper ‘ticket’ giving all the call details is printed out at the sector desk. Any further information about the call is then recorded on the paper ticket. As soon as the allocator has acknowledged receipt of the printed ticket, and a member of the sector team has confirmed dispatch of a vehicle to the scene, the call is removed from the overview screen, although details can still be brought up on the detail screen by entering the CAD number.

Between the allocator and the radio operator, there is an ‘activation file’. This is a slotted metal box, with one slot for each vehicle being controlled by this sector. When a vehicle is out on a call, the paper ticket (or tickets) corresponding to that incident are placed in the slot. They are therefore available to both allocator and radio operator, and provide an overview of activity in the sector. When an ambulance crew reports that they are free after an incident, the ticket is turned round in the slot, and when they report that they have returned to the ambulance station, the ticket is removed, checked and filed.

For lower priority calls (those which are categorised as non-life-threatening, and also ‘urgent’ calls from doctors’ surgeries), if there are insufficient resources, the allocator may not allocate an ambulance to the job immediately, but keep the paper tickets on the desk, organised by urgency. Vehicles will be assigned to these jobs when convenient (e.g. if passing close to the scene when returning from a completed job) or when there are sufficient spare resources on the sector to allocate a vehicle without cutting free resources too low. At quieter moments, allocators can be seen leafing through and re-organising these tickets, as they use the physical activity to support their mental planning of how to deal with these calls (Mackay, 1999). Similarly, for suspected duplicate calls (multiple calls for one incident), allocators will place the tickets side-by-side, and discuss them with other staff (such as their radio operator or another allocator) – again, the physical properties of the paper tickets help the allocators to form plans around them.

As well as the information immediately available on the sector desk, there are other information sources around the room. Being open-plan, all staff can see and hear activities on other sector desks; in addition, there are large wall displays giving performance indicators such as number of call-takers free or number of calls queuing.

Allocators are highly skilled individuals who have experience of all the main roles within CAC. New staff are trained initially as call-takers; many will receive additional training to become telephone dispatchers. With between 9–18 months of job experience, many telephone dispatchers receive further training to become radio operators, who will typically have 2–4 years experience in CAC. Finally, some staff will train as allocators who then typically have 5–8 years of experience in the job. Some training is directed, but much of it takes place ‘on the job’, by working closely with senior colleagues.