

## CHAPTER 1

# Golden Rules

- ! Rule 1: Every incident is different, but the solutions are the same
- ! Rule 2: Prior planning and preparation prevents poor performance
- ! Rule 3: When exercising, start small and build up
- ! Rule 4: No plan ever survives first contact with the enemy
- ! Rule 5: Disasters do not respect borders: cross-border agreements must be in place
- ! Rule 6: Children can get hurt too

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### **Rule 1: Every incident is different, but the solutions are the same**

The potential variety of major incidents is huge. Consider the immediate environment in which you work: how many potential sources of a major incident are there? Now expand this area geographically to include the local region/county/state and then the country in which you work: how many other sources did you consider?

Even at high-risk locations, such as a chemical factory or airfield, it is unrealistic to predict exactly where an incident will occur, and what the environmental conditions will be like when it happens (e.g. day or night, weather, wind direction). It is neither plausible nor desirable to write a plan with the detail to cover all eventualities. Even if you could produce such a plan, it would be unreasonable to expect all relevant stakeholders to read it all – let alone remember the detail and apply it in a crisis.

As a result, major incident response plans should be ‘all-hazard’ and based on a common structure of priorities. If the same priorities are applied consistently, then plans will be constructed in a similar way, personnel will find them easier to navigate, experience will be analysed and deconstructed with a common logic, and learning (individual and organisational) is likely to be reproducible. A response, when necessary, will be standardised and follow best practice.

This is the same principle adopted for resuscitation of the seriously ill or injured patient: <C>ABC [1].

The following hierarchy of priorities can be used in any circumstance that generates multiple casualties [2]:

- Command and control
- Safety
- Communication
- Assessment
- Triage
- Treatment
- Transport

CSCATTT is the <C>ABC of major incident management. These principles can be used at the scene or at a hospital, and in a military or civilian environment. The principles provide a systematic response to any incident, natural or man-made, irrespective of its type.

If you remember nothing else, remember CSCATTT.

## References

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2. Advanced Life Support Group. *Major Incident Medical Management and Support*. London, BMJ Publishing; 2002, 2nd edition.

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### **Rule 2: Prior planning and preparation prevents poor performance**

Or *'Better to prevent and prepare than repent and repair'*

Or *'To fail to plan is to plan to fail'*

This time-honoured military saying is self-explanatory: anticipation of the likely challenges posed by any task, before they arise, enables sensible planning for how those challenges can be met. The attitude 'It will never happen to us' is no defence for poor planning.

The importance of thorough and effective planning is demonstrated by the actions of Major General Sir Frederick Roberts during the Second Afghan War.

#### **MILITARY EXAMPLE**

##### **The Second Afghan War**

*The Second Afghan War (1878–1881) had gone badly for British Forces, culminating in disaster at Maiwand on 27 July 1880: the Berkshire Regiment lost their colours, and were almost wiped out, as were two regiments of loyal Sikh Cavalry. The British garrison at Kandahar immediately came under siege. The main British force at Kabul seemed powerless to help them. Roberts volunteered to lead 10 000 troops to relieve Kandahar, 313 miles away, in the heat of the Afghan summer.*

*Roberts had already demonstrated the value of meticulous preparation the previous year. Hugely outnumbered by Afghan fanatical holy warriors (Ghazis) at Sherpur, but aware that the Ghazis liked to attack under cover of darkness, he took the precaution of laying in large supplies of star-shells, newly developed at the Royal Ordnance Factories. He set up his riflemen on a ridge overlooking an open plain, and kept them at high readiness. As 100 000 Ghazis launched their 'surprise' assault across the plain, they were lit up by the star-shells, making easy targets for the rifles. Roberts' victory was total.*

*Tasked with relieving Kandahar, he planned his march with equal thoroughness. He formed a 'Transport Corps' to manage water and food supplies on the march, and to convey heavy equipment over the mountainous terrain. So successful was his organisation that Roberts brought his force to Kandahar in 22 days, intact and in fighting order. They engaged and defeated the besieging Afghan army on 1st September.*

The variety of possible major incidents demands an 'all-hazard' approach with maximum flexibility (Rule 1); however, this should not be misinterpreted as vague planning. An acute receiving hospital will have a common core plan (the 'all-hazard' response), but may also have a series of supplements containing detail for specific high-risk incidents within the area of the hospital's responsibility – for example, an incident generating large numbers of children, large numbers of burns, or casualties that have been exposed to toxic chemicals or radiation.

Specific high-risk sites (airport; chemical installation) will demand their own plan for a major incident. A mass gathering is a frequent and predictable risk for multiple casualties, and national guidance exists for those preparing the medical response plans at sports stadia and music events [1, 2]. Common principles of major incident management can still be followed to structure these plans (Rule 1).

Consider the high-risk sites or events in your area that could produce a major incident. Does each location have a plan that is regularly rehearsed and reviewed? Is there consistency between the plans in their structure and scope of content? Does each plan conform to published national guidance or statute (such as the Civil Contingencies Act 2004 [3])?

## References

1. Department for Culture Media and Sport. *Guide to Safety at Sports Grounds*. London, HMSO; 2008, 5th edition. Accessible at: [www.culture.gov.uk/images/publications/GuidetoSafetyatSportsGrounds.pdf](http://www.culture.gov.uk/images/publications/GuidetoSafetyatSportsGrounds.pdf).
2. Health and Safety Executive. *Event Safety Guide: A Guide to Health, Safety and Welfare at Music and Similar Events*. Norwich, HSE Books; 1999.
3. Civil Contingencies Act 2004. Accessible at: <http://www.cabinetoffice.gov.uk/ukresilience/preparedness/ccact.aspx>.

### Rule 3: When exercising, start small and build up

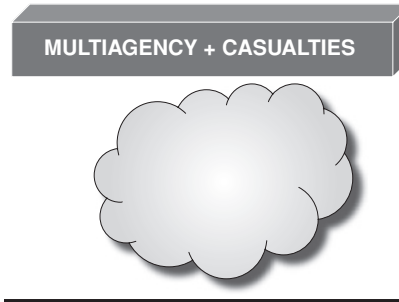
When designing a major incident exercise, it is tempting to plan for what is perceived to be the most realistic scenario: a multi-agency exercise with simulated casualties. This approach, like a man building his house on sand [1], does not first secure the foundations of education (Figures 1.1 and 1.2): it runs the risk of not testing the plan but the staff, who will feel under personal pressure. Without an understanding of the fundamental principles of a major incident, response staff may resent and disengage from the exercise, thus reducing or negating its value.

Most front-line personnel, outside the major incident planning core team, will have a limited working knowledge of the procedures involved within a major incident. The cognitive understanding and psychomotor skills that front-line staff need should be taught or refreshed prior to a multi-agency exercise.

Knowledge and understanding can be built through lectures or an online training programme; practical skills (such as triage or the use of a radio) can be acquired individually; decision-making and judgement can be assessed through a tabletop exercise. This step-wise approach to learning allows staff to have built their competencies in a controlled environment and to participate with confidence in a multi-agency exercise with simulated casualties (when there is little or no opportunity to interrupt the flow of activity for structured education). Staff will also be empowered to give more informed feedback on how the plan worked.



**Figure 1.1** The structured approach to major incident exercises. PEWC, practical exercise without casualties.



**Figure 1.2** The unstructured approach to major incident exercises.

The merit of advertising a multi-agency major incident exercise is debatable. Advertising the exercise, and potentially offering the required training in the interim, removes personal and corporate anxiety, and allows adequate preparation. This preparation builds confidence in roles and procedures and moves the focus away from individual performance to the performance of the plan and the collective response. However, experience has demonstrated that those off-duty may not be contactable when the planned exercise occurs, particularly when this is out of normal working hours.

Not providing warning of exercise would seem to be a better test of the response as a genuine incident will arise without any advance notification. However, rumour usually leaks out, regardless of precautions to the contrary, and this can cause broad apprehension of staff. Should they check the plan and their roles? Of course they should, but false rumours degrade morale and those in key roles will feel under personal pressure: again, this may threaten disengagement and reduction in the effectiveness of the exercise.

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### **Rule 4: No plan ever survives first contact with the enemy**

*Viscount Slim of Burma*

Although planning is essential (Rule 2), plans must be flexible enough to be adapted as the situation changes. Rigid adherence to plans that have been made irrelevant by events can have disastrous consequences.

An example of inflexible planning is provided from the fall of Singapore, 15 February 1942.

#### **MILITARY EXAMPLE**

##### **The Fall of Singapore**

*Plans for defending the vital British Naval base in Singapore were almost entirely designed to meet an attack from the south. A northern assault across the straits from the Malayan mainland seemed impossible as Malaya was in British hands. The plans also assumed British naval superiority. The loss of HM Ships Prince of Wales and Repulse to air attack and the dramatic speed of the Japanese occupation of Malaya left the 'impregnable fortress' of Singapore vulnerable to attack from the north. Japanese forces crossed the straits and despite valiant resistance conquered the island in just 7 days.*

Therefore, to be optimally effective, major incident plans must be as follows:

- Flexible and able to allow for deviation from an expected course of incident evolution, encouraging real-time decision-making
- Easy to follow during an incident
- Inclusive of local knowledge
- Adjusted to learn lessons from previous exercises and incidents
- Subject to annual review
- Based on individual, role-specific action cards

A major incident plan acts as the framework for an organised response. Pitfalls in planning are as follows:

- A plan that relies on individuals: the presumption is that they never take leave or are unwell. Each role should have a number of people prepared to take it on.



- A plan that ignores the possibility of clinical areas being unavailable.
- An activation procedure that does not empower 'front-line' personnel to declare a major incident.

Within the emergency services and at hospitals, the on-call system allows senior managers and clinicians to have major incident roles that are flexible and are allocated at the time of the incident.

The exceptions to this include the roles adopted at a mass gathering major incident, which are predetermined and both staff and equipment may be pre-positioned. The potential pitfall in this circumstance is that whilst the advanced determination of roles allows for a prompt and comprehensive response (by individuals nominated for roles in command, triage and treatment), it is possible that key personnel may already be casualties and be unable to fulfil their role. Therefore, shadow appointments should be made for mission critical roles.

### **Rule 5: Disasters do not respect borders: cross-border agreements must be in place**

A major incident may cross health district, county, state or national boundaries: consider particularly a natural disaster (e.g. earthquake, flood) that will not respect these artificial boundaries.

By definition, a major incident demands extraordinary medical and rescue resources. These will be drafted in from other local emergency services, or even other countries. Examples of international collaboration are: the resources from England supporting the crash site of Pan Am Flight 103 in Lockerbie, Scotland (1988); the existing plans for mutual support between England and France for rail incidents that occur in the Channel Tunnel; and the dual response of French and Italian resources in the Mont Blanc tunnel fire (1999: the separate management of the two halves of the tunnel by independent French and Italian companies is a major factor cited in the failure to provide a concerted response).

Where cross-border cooperation occurs, the predictable complexity of managing a major incident will likely be compounded by differences in language, precedence of emergency services (for example, some countries in Europe have the Police as the lead agency, while others have the Fire Service), triage systems, medical equipment and drugs, treatment protocols, and the scope of practice of pre-hospital care providers (for example, France has a physician-based system; the UK has a paramedic-based system). Therefore, any opportunity for international joint planning and training is likely to be beneficial: remember that 'no time in preparation is wasted'.

#### **Local working**

Effective scene control demands that at the scene of an incident where different ambulance services and medical teams are working together, an individual takes the lead. Command of the respective emergency services is effected through 'Incident Commanders' (Silver Commanders) and their deputies ('Forward Incident Commanders', or Bronze Commanders).

Silver and Bronze Commanders should be sufficiently experienced decision-makers: however, all staff should respect the post, irrespective of the post-holder's rank or normal appointment.

Problems can occur where the chain of command is unclear or medical personnel refuse to follow instructions. At the Kegworth

air crash on the embankment of the M1 Motorway (1989; 49 dead, 74 injured), there were ambulance resources from more than one service, an unclear health service command structure, and duplication of the casualty clearing station function [1, 2].

### **International working**

The activation of medical resources to assist a distant country is a humanitarian act and there are frequent examples following, in particular, devastating, uncompensated natural disasters such as earthquakes and tsunami (see definitions in *Introduction*). The more common cross-border working relationships between adjacent countries are less visible, but they are no less important.

Differences in national laws in an international setting are a potential for friction:

- (a) *Example: Drug therapy.* Internationally, the UK is one of the few countries that allows diamorphine (heroin) to be used for the treatment of pain. A UK medical team carrying diamorphine would need to be cognisant of not breaking the laws of the country they are supporting.
- (b) *Example: Medical interventions by non-doctors.* Internationally, training of nurses and paramedics differs and this is reflected in procedures that they are allowed to undertake (even under medical supervision). The potential for disaster within the Channel Tunnel has required a special understanding to be created regarding intervention by UK ambulance paramedics, as French law restricts invasive procedures to doctors only.

### **Equipment**

Across national and state/county boundaries, ambulance services predictably operate different vehicles with different equipment scales, stored in a non-standardised manner. Lack of interoperability of equipment is likely; manifest most simply as different heights and widths of ambulance stretcher that cause difficulty in securing the stretcher when placed in an alternative ambulance.

### **References**

1. Malone W. Lessons to be learned from the major disaster following the civil airliner crash at Kegworth in January 1989. *Injury* 1990; **21**: 49–52.
2. Casualty rethink after rail crash disaster. [Editorial] *Emergency Nurse* 2001; **9**:4.

## Rule 6: Children can get hurt too

Ambulance services and emergency departments are used to dealing with sick and injured children, but rarely more than one or two critical cases at any given time. Evidence from major incidents shows that children are consistently involved [1–4] and some incidents predominantly involve children (Table 1.1).

Most major incident exercises, both pre-hospital and at hospital, do not involve children as mock casualties because of complications over regulations and their welfare during the exercise. If children are involved at all during incident play, then dummies are likely to be used, reducing the element of realism.

These factors may mean that neither the emergency system nor its personnel are fully prepared for the impact that a significant number of children will have on them. Dealing with children generally engenders more anxiety among rescuers than dealing with adults. This will predictably result in over-triage, which may be compounded by any failure to understand the physiological differences between young children and adults (see Rule 33) – specifically, over-triage will occur if personnel are only familiar with adult triage systems. While over-triage may serve in rapidly evacuating

**Table 1.1** Major incidents predominantly involving children

Year	Location	Incident	Deaths
1966	Aberfan, Wales	Slag heap collapse engulfs Pantglas Junior School	144 (116 children)
1996	Dunblane, Scotland	Dunblane Primary School shooting incident	16 children + 1 teacher
1999	Colorado, USA	Columbine High School shooting	12 children + 1 teacher
2002	San Giuliano di Puglia, Italy	Earthquake involving school	26 children + 1 teacher
2004	Beslan, North Ossetia	Militants take 1100 hostages (777 children) in Beslan school	Estimated 396, including 186 children

children from the scene, it will dilute the limited resources available at most hospitals that should be focused on the genuinely needy.

Therefore, both hospitals and ambulance services need to have a paediatric element to their plans: this must include a scale of equipment. At the scene, casualty distribution must take into account the suitability of local receiving hospitals when determining the destination of critically injured children. Paediatric Intensive Care is not universally available. Those hospitals without a Paediatric Intensive Care Unit (PICU) must consider how this capability may be rapidly improvised on a temporary basis, pending transfer to a PICU at a time when ambulance resources are stretched.

Following natural disasters or a refugee crisis, a significant proportion of patients requiring medical treatment will be children and many of these children will require feeding and treatment for infectious illnesses [5]. This should be taken into account in any response planning.

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4. Hines K, Hines W. The Aberfan disaster: 21 October 1966. *Pre-Hospital Immediate Care* 2000; **4**: 53.
5. Parke T, Haddock G, Steedman D, Pollock A, Little K. Response to the Kurdish crisis by the Edinburgh MEDIC 1 team. *BMJ* 1992; **304**: 695–697.