
SPECIAL ARTICLE

Terrorism – New threats, new challenges?

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Introduction

The conviction of David Copeland for the bombings which culminated in the atrocity at the Admiral Duncan in Soho, London on Friday 30th April 1999 has given us another eponymous terrorist, the *Soho Bomber*, to add to a long catalogue of those who chose such methods to further their political, sectarian or personal aspirations. Yet the Soho Bomb was in a number of ways different to the long run of more familiar terrorist atrocities. This article reviews the changing demographics of terrorism and their likely effects on law enforcement and the health services response.

The New Terrorism?

In the past, terrorism has been largely practiced by groups of individuals belonging to an identifiable organisation with defined political, economic or social objectives. Such organisations include the Japanese Red Army, Germany's Red Army Faction and Italy's Red Brigade as well as nationalist terror groups such as the Abu Nidal Organisation, the Provisional IRA and the Basque separatist group ETA.

These groups issued communiqués taking credit for and explaining their activities and however distasteful their actions might be, their ideology and motivation was usually clear.

All these familiar terrorist groups engaged, for the most part, in highly selective and mostly discriminate (in their own eyes at least) acts of violence. They bombed various symbolic targets representing the source of their discontent: embassies, associations of the "opposition", the security forces and National Airlines. The aim of each atrocity was to attract attention to themselves and their cause and to spread terror.

The new generation of terrorist seems to be different to this familiar paradigm. Terrorists are increasingly part of far more

indistinct and broader movements. Groups appear to be more loosely connected or indirectly linked through networks of professional (full time) terrorists and amateur supporters, sympathisers and would be terrorists who may lack the expertise of their more established counterparts.

The absence of any central command or authority is significant in that it may be a factor in removing any previous inhibitions on the terrorist's desire to inflict widespread casualties. In addition, the potential locations for terrorist atrocities are likely to be much more diverse than before: we are all potential victims, irrespective of location. The victimisation of traditional terrorist adversaries is likely to be much less obvious than previously.

It seems characteristic of the new terrorist that no responsibility is claimed for incidents. By maintaining their anonymity, they may believe that they are able to capitalise further on the fear and alarm generated by their violence.

The likelihood of casualties in a terrorist incident, whatever the agent, is directly linked to the notice given prior to the attack. It is the actions of the police following the receipt of such a warning that will largely determine how many people are killed and injured. The Omagh bomb on 15th August 1998 showed only too clearly what can happen if the security services are given maliciously false information. Unfortunately, it is characteristic of the many smaller terrorist groups and isolated operators that, just as they tend not to claim responsibility for incidents, neither do they give prior warnings. This is particularly likely to be the case when the atrocity is not designed to publicise a political agenda. Apparent "humanitarian" actions, in avoiding casualties, may bring some positive benefit to organised groups, by creating an impression of clemency, those who kill for

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other reasons or none, or for the apparent pleasure of killing, are unlikely to be motivated by such considerations.

It might be argued that the Soho Bomber is the archetype of the new terrorist, a lone operator representing no-one but himself, not subject to any apparent code, however perverted, and armed with the expertise of the internet.

If this is truly the face of terrorism to come, then the changing demographics of terrorism will have dramatic effects on the two main agencies responsible for responding to terrorism: the health services and the police. Having said that, it would be an extremely sanguine individual who predicted the end of conventional politically motivated terrorism. What seems likely is a general shift of emphasis.

Furthermore, where apparently organised groups continue to indulge in terrorist activities, examples such as the sarin release by the Aum Shinriko sect on the Tokyo underground in 1995 suggest that we are likely to see the increasing use of chemical and biological agents. Fortunately, to date, although terrorists are classically more imitative than innovative, there has not yet been a further significant chemical (or biological) atrocity.

Medicine and Terrorism

In medical terms, there is no doubt that it is the civilian services, namely the National Health Services, which have to provide the initial response to the injuries associated with terrorism. In the case of the Soho bomb, these injuries were all the more devastating as a result of the six inch nails packed into the explosive device. Such injuries, of course, are all the more difficult to manage because of the numbers of casualties typically associated with terrorist incidents. Such large numbers of casualties are all too likely to overwhelm hospital emergency departments. In the aftermath of the Soho bombing, a number of the clinicians involved commented that the response might have been more effective and less traumatic for their staff if they had had previous experience or training in this area and if access to expert advice had been available to them. Just as such expertise is not widely available to the NHS, there is no formal national means of access to it for the police and similar agencies.

Furthermore, were we in the UK ever to experience a chemical or biological terrorist incident, even greater problems would be likely to arise in terms of its initial recognition and management. Although there is a co-ordinated response at government level, there is undoubtedly a deficit at clinical level.

As a consequence of comments such as these, the Forensic and Medical Aspects of Terrorism Group was established. This body

includes representatives from the NHS, the Armed Forces (offering expertise in ballistic injury and chemical and biological warfare.), The Department of Health, The Home Office (Terrorist Protection Unit) and the Security and Police Services.

This group has identified three areas of concern: education, expertise and data collation (and analysis).

With regard to education, clinicians, police officers and other professionals who are involved in the response to terrorism need to be educated and informed at a level which is appropriate and relevant to their personal responsibilities. Similarly, appropriate expertise needs to be readily available, by means of a clear easily accessible process in all parts of the country and at all times. Finally, medical and forensic data from previous (and future) terrorist incidents needs to be collected, collated and analysed. Initiatives are now in place regarding education and expertise, our third aspiration may be harder to achieve. The threats from conventional weapons and chemical and biological agents are different and are discussed separately.

Conventional Threats - bombs and bullets

The conventional weapons of the terrorist are the bomb and the bullet. Despite the changes discussed above, it seems likely that, for the most part, terrorist casualties will continue to result from the use of commercial and improvised ballistic weapons.

There are undoubtedly pockets of knowledge about the clinical and forensic aspects of blast and gunshot injuries, but many areas of the United Kingdom have no direct experience of the consequences of terrorism. The response to the Soho bomb only confirmed once again the effects of such an atrocity on unprepared medical, nursing and other health services staff. The nails that lacerated the flesh of the victims were designed not only to mutilate and to terrorise the victims and survivors, but also to terrorise those who would be called upon to respond to the incident. Such reactions can not improve the quality of patient care. Although there can be no substitute for direct clinical experience, education, in providing vicarious experience can have a positive effect in preparing not only clinicians but all those who are likely to be confronted with the results of terrorism. Thus the "terror effect" of terrorism can be reduced. This might be considered to be a form of "psychological prophylaxis".

Educational initiatives are also important in improving the clinical management of individual patients. Clinicians and others need to be informed about the clinical spectrum of the injuries that result from

these agents. This is as important for the policeman called upon to perform first aid at the scene as it is to the surgeon.

To give a dramatic example, amputations due to blast are "avulsive" with tissues being torn and damaged much higher up the limb than the apparent level of the amputation. A comparison might be made to the tearing of the tendons out of a chicken leg which occurs when the ends of the legs are removed whilst preparing Sunday lunch. The result is that amputated parts can never be re-implanted and complex procedures in an attempt to do this may compromise the patients survival and use precious resources and personnel who could be more effectively employed with other victims. Yet in military rather than civilian practice, amputation of blast damaged limbs and provision of a suitable stump has been accepted doctrine for 200 years. This issue can be effectively addressed by education, it can also be answered by the making available of appropriate expertise and experience. As stated above, it is one of the aims of the FAMAT Group that such provision should be available and that an effective mechanism is in place to obtain it.

It might be suggested that this initiative would tread on sensitive ground in attempting to thrust assistance on those who have not sought it. However a more appropriate analogy is to the National Poisons Unit which provides twenty four hour access to information on a subject which is not a common part of most clinicians' day to day practice. The clinicians who will be involved in this rota not only include members of the armed forces and civilians with extensive experience of terrorism but may also include those with experience gained through work for such organisations as Medecins Sans Frontieres and the other internationally recognised major aid agencies.

It is likely that, even taking into account the changes in the demography of terrorism discussed above, such incidents will remain relatively uncommon. An additional advantage of the rota of experts is that it will tend to concentrate whatever clinical experience is available in the hands of a relatively small but identifiable group who will be able to bring this experience to bear when it is required. As a consequence, this experience will not be dissipated or lost. This will allow the build up of what has been called "institutional memory". Just as institutional memory is essential for the correct management of the wounds of war, so it is necessary to ensure the best results for the victims of terrorism.

The third priority identified above was the collection, collation and analysis of data. From a medical and forensic point of view, perhaps the most studied terrorist incidents in the United Kingdom were the

Birmingham Pub Bombings in 1974 when two bombs exploded at the Tavern in the Town and Mulberry Bush public houses killing eleven people and wounding eighty nine. In these cases as in most others, the emphasis has been on the analysis of post-mortem forensic data and of the scene. Yet apart from the still relatively limited published data (all of it published over twenty five years ago) none of this raw forensic data is accessible or available for use by scientists or clinicians. In addition in this and in every other case, published discussion of the clinical management of the survivors (including those who died later of their injuries) was limited and this data is now lost.

The only area in the UK where there is an identifiable single source for forensic data related to terrorist atrocities is Northern Ireland. Small pockets of important data are located in the areas of individual incidents and no one is able to assess the bigger picture which might be afforded by central data collection.

In addition, clinical data is of inestimable value both to scientists and clinicians, and unless it is specifically collected and retained will be lost under NHS procedures designed to avoid the uncontrolled accumulation of old medical records. It is therefore essential that a central body is established to collate this information.

Why? Collection of data is not a sterile activity of appeal only to those who wish to accumulate data for its own sake. Clinical and pathological data is essential to the correct management and planning of the response to all future terrorist incidents and to developing appropriate treatments and methods of protection. Three examples will demonstrate the potential importance of this data.

The ceramic plates familiar to all those who wear the conventional British "flak jacket" are placed where they are simply because analysis of data shows that that is where the majority of fatal single bullet shots land in casualties. Conversely, some authorities on blast protection have designed a blast suit which protects the neck from hyper-extension. They believe that this is a significant cause of death in blast injuries. Expert British opinion does not support this, and yet the definitive data on cervical spine injuries is lacking and a definitive answer cannot therefore be given.

The British Army is currently considering its medical response to blast injuries and is unable to predict the incidence of primary blast lung in military casualties. Although the situations are not immediately comparable, this question might in some part be answered by comparison to the incidence of blast injury in terrorist incidents, particularly if the comparison is to troops in the OBUA (Operations in built-up areas) role. Yet once again this information is

simply not available, although it undoubtedly exists in pockets throughout the UK.

Collation of all this clinical and forensic data will allow us to answer, to a greater or lesser extent, these and many other questions. This will not only improve the treatment of casualties but will also improve the protection of those whose work takes them into this hostile environment.

The new armamentarium? Chemical and biological agents

Although it would appear that the risk of a chemical or biological attack remains low, there is no doubt that the potential consequences could be very severe. The deliberate terrorist release of such agents brings fears of the sort of Domsday Scenario of which sensationalist novels are made. Compared to the relatively small numbers who are likely to be involved in "conventional terrorism" the casualty numbers in chemical or biological terrorism are potentially enormous: thousands, tens of thousands or millions rather than (at the most) hundreds. Yet a rational response has to be available, were such an event to occur. Preparedness for such an event has been identified as a priority by the Department of Health which has recently issued guidelines to the NHS for dealing with such a situation.

Judging the appropriateness of this response is immensely difficult and will almost certainly generate criticism whatever level of response is chosen. The key to this preparedness is the balance between the statistical chance of a release and the magnitude of the consequences. In addition, over preparedness may generate panic, increase the number of hoax incidents, reduce the day to day operational efficiency of the health services and cost a fortune in an already cash starved environment. In general, the effects of under-preparedness will only be demonstrated in the event of an incident. No-one would accept a complete absence of preparations, but the issuing of respirators to every member of the community and the provision of high security isolation facilities at each and every district hospital would, clearly, be equally unacceptable. It must be accepted that there is no way that the NHS can be fully prepared for the "nightmare" scenario. To be so would divert resources away from patient care which would be neither socially or politically acceptable. It is the responsibility of the NHS and its central planners therefore to ensure that the most effective use is made of whatever resources are deemed appropriate. It would seem reasonable that a hospital's response to a chemical or biological incident be based on the conventional Major Incident Plan which is a statutory requirement for every NHS Trust.

Earlier comments about the importance of

education and the provision of expert advice apply even more dramatically to chemical and biological agents than they do to conventional weapons, although, fortunately, in the UK there is no outstanding backlog of data to collate. The National Poisons Unit "Toxbase" internet database currently provides information on a wide range of potential chemical hazards, but no such information is similarly available for biological agents. In either event, there is no doubt that the provision of rapid expert advice will be essential in the management of deliberate releases.

The majority of health care professionals require a far greater understanding of the risks, consequences and appropriate management of the casualties of a biological and chemical release. Efforts to achieve this, lead by the Department of Health, are already in place but there is clearly a great deal of work to be done.

It must be clearly understood that there are a number of significant differences between incidents due to chemical and biological agents. These will be discussed briefly below.

In general chemicals such as nerve agents (for example Sarin) and blistering agents (for example mustard gas) have rapid onset, require immediate treatment and have the potential for contaminating rescuers. (Choking agents such as phosgene are classically slower in onset.) On the other hand, biological agents such as the bacteria which cause plague or anthrax, or the viruses responsible for smallpox or the haemorrhagic fevers have a much longer onset period, sometimes up to days or weeks. In this case, therefore, recognition of an incident may be much more difficult since the typical cluster of immediately affected individuals will be absent. Diagnosis is much more likely to depend on public health surveillance of unusual symptom clusters and it may be some time before a pattern is recognised. The longer this takes, the greater the consequences of the release are likely to be. This phenomenon has been amply demonstrated in a number of unusual disease outbreaks not related to terrorism, of which the recent outbreak of clostridial disease amongst heroin abusers in Glasgow (June 2000) provides an informative example. Once the release has been recognised, and the causative organism identified, antibiotics may be effective against bacteria but there is unlikely to be any effective treatment for viral disease, few vaccines are likely to be available, and the potential for some viruses to spread from person to person, as opposed to direct contamination, such as occurs with chemicals, is a significant concern. For all these reasons, hoax announcements of release may cause as much concern as an actual release.

In the case of chemical and biological

agents, the initial key step in preparation is awareness training coupled with improved surveillance systems. In addition, contingency plans must be available to deal with large numbers of infected patients. There are currently only two high security infectious disease units in the United Kingdom. It must be accepted, however, that formal isolation facilities are never going to be available on a scale sufficient for a mass casualty incident resulting from chemical or biological terrorism. Similarly, there must be more widespread decontamination facilities and an initiative designed to achieve this is currently underway, once again lead by the Department of Health. Health Service planners will also need to consider the stockpiling of antibiotics and the optimisation of the availability of vaccines where they exist. Wherever possible, new vaccines should be developed.

Thus, with the exception of the initiatives listed above, once again the main thread in the medical response to chemical and biological weapons is education.

The Role of the Defence Medical Services

There can be no doubt that many members of the Defence Medical Services (DMS) have expertise in the management of bomb and bullet wounds in the peace and war settings. Service doctors already act as a repository of that "institutional memory" referred to above. All service doctors need to know about ballistic injury and themselves have access to relevant material in the *Journal of the Royal Army Medical Corps* and to the *Principles of War Surgery Course*. The armed forces would also have a pivotal role to play following the release of chemical or biological agents, they may also call upon the expertise of DERA Porton Down. It must be accepted, however, that in both cases, the initial response, and in terms of numbers of personnel, the predominant response must come from the civilian services, namely the NHS.

What the DMS can do is to provide clinical advice and act as a source for educational initiatives, not only with regard to the clinical management of patients, but also concerning the management of situations involving large numbers of casualties, bringing their expertise in triage and patient prioritisation to bear.

A further role of the DMS is likely to be the prediction of future weapon systems and agents. It is often said that any weapon which starts out in the hands of the forces of law and order, will, eventually, fall into the hands of the terrorist. The DMS working with associated agencies are in an ideal position to monitor future threats and to assess their terrorist potential as well as the medical response which will be required in

the event of them being used.

A number of novel weapons are now available, one of which is the fuel-air explosive. This weapon is capable of producing devastating injuries due to the blast wave and severe burns. Active steps are being taken to find ways of treating the injuries caused by these weapons in a military context. Successful initiatives in this area would be equally important were these weapons ever to be used in a terrorist role.

Conclusion

The future of terrorism appears to be changing. It seems that the "lone terrorist" is likely to be much more prominent than before, when terrorism was largely seen to be the province of organised political groups with a clear stated agenda, an apparent command structure, and a willingness to give prior warning of attacks and to admit responsibility for their acts. The "new terrorist" is likely to be much more anonymous, working to a personal or less clearly defined agenda.

With the exception of Northern Ireland, terrorist activity has, until recently remained for most of us an event we were unlikely to experience, an event associated with conditions of civil unrest or disorder which is rightly the province of the security forces. This reassuring assumption is probably no longer valid. It would seem that in the future all areas of the United Kingdom will be at risk of terrorist atrocities.

Despite the use of sarin by Aum Shinriko, it remains the case that the majority of terrorist atrocities will result from the use of conventional weaponry, namely bombs and bullets. The use of chemical and biological agents can not, however, be ruled out, and indeed to many it seems only a matter of time before such an incident occurs.

Thus it seems that terrorism, in one form or another will be always with us. The predicted changes in its demography and potential choice of weapon have a number of important implications for the police and security services on the one hand and the health service on the other. New methods of policing are likely to be necessary in order to apprehend terrorists and prevent incidents. The health service response, which has to date been the "Cinderella" of the terrorist world will need to be organised and developed. The key themes in achieving this will be the education of clinical staff in relevant specialities, the making available of appropriate expert advice and experience and the central collection, collation and analysis of medical and forensic data. The Armed Forces Medical Services are likely to play a key role in this, and will also be required to work closely with other agencies in order to identify new threats and to develop appropriate responses.