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Part of the solution, not the problem: the crowd's role in emergency response

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This paper seeks to explore ways in which the response required to deal with terrorist threats of the 21st century differs from that required to respond to threats the UK has faced in the past, in particular the threat from the Irish Republican Army (IRA). It explores the resilience of crowds to suicide bomb attacks, including the ability of spontaneous, competent 'zero' responders to emerge from within the crowd before professional first responders arrive at the incident scene. The first part of the paper will cover the history of terrorist attacks on the UK and Europe that have resulted in large numbers of civilian casualties and will compare these with mass casualty incidents resulting from causes other than terrorism. The speed with which professional responders can reach the incident site will be considered and potential sources of immediate response, including that provided by members of the public who are themselves caught up in the event, will be discussed. The second part will consider scenarios in which the 'normal' response chain (in which professional first responders are summoned to the incident site and arrive promptly) is broken. Responders may be prohibited from reaching the casualties because the incident has taken place in a location that is difficult to access; because they cannot access the casualties without putting themselves in danger; and because of hostage situations in which terrorists actively deny access to the incident site. It will be argued that in such cases current thinking on the response to terrorism may need to be modified. At times the affected crowd may need to fend for itself, drawing on resources, knowledge and skills that exist within the crowd itself.

Introduction

The terrorist threat faced by the United Kingdom today has changed significantly from that previously experienced during the campaign waged by the Irish Republican Army (IRA) throughout the last quarter of the 20th century. Islamist-inspired suicide

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bombers, of the kind who attacked London's mass transport systems on '7/7' (i.e. 7 July 2005), are far more likely to target crowded public places and to inflict intentionally mass civilian casualties (Mowatt-Larsen, 2010). Understanding the complex challenges this presents to the UK security, resilience, and public safety sectors and emergency services is dependent on understanding how, and in precisely what ways, mass casualty terrorism differs from our current experience of terrorism on the one hand and mass casualty incidents on the other.

Terrorism per se is far from new to the UK: between 1970 and 2005, more than 19,000 IRA bombings took place on UK soil (Oppenheimer, 2008). In general, however, these attacks tended not to result in large numbers of civilian casualties (though it is acknowledged that there were some high-profile exceptions, such as the bombing of the Brighton hotel hosting the Conservative Party conference in October 1984; and the attack on a Remembrance Sunday ceremony in Enniskillen, Northern Ireland, in November 1987). Attacks on the innocent were seen to damage the IRA's cause (Coogan, 2002), and therefore the organisation often gave warnings of impending attacks so that targeted areas could be safely evacuated. The IRA aimed instead for material damage: the bomb that exploded in the City of London's Bishopsgate district on 24 April 1993, for example, caused damage estimated at between £1 billion and £2 billion, but claimed just one life, a pattern reflected in a number of other major IRA attacks throughout the 1980s and 1990s.

In contrast, the simultaneous suicide bombings carried out by Islamist terrorists on London's public transport systems on 7 July 2005 resulted in 52 deaths between the four incident scenes. More than 700 people were treated for injuries, of whom more than 400 required hospital treatment; in total, approximately 4000 people are thought to have been directly involved (London Assembly, 2006). A year prior to the London attacks, on 11 March 2004, approximately 1700 people were injured and 191 died when Islamist-inspired bombers placed a series of improvised explosive devices on 11 commuter trains en route to the Spanish capital, Madrid (Hinds, 2006). In both London and Spain, the transport networks were targeted at the busiest times of day with no warning given to enable evacuation, guaranteeing the maximum possible number of casualties. Worldwide between 1980 and 2001, suicide bombings accounted for only 3% of terrorist attacks but caused nearly 50% of casualties (Pape, 2003).

This focus on the crowd as a target, whether instead of or as well as buildings and infrastructure, should bring with it a corresponding focus on how resilience to such attacks is developed and maintained. In particular, we believe that valuable lessons can be learned, and a more productive future response to terrorist incidents planned, from considering the response of the crowd during mass casualty incidents resulting from any cause, such as the fire at King's Cross underground station on 18 November 1987, in which 31 people died; the crowd disaster at Hillsborough Football Stadium in Sheffield on 15 April 1989, which killed 96; the sinking of the pleasure boat *Marchioness* after a collision on the River Thames on 20 August 1989, in which 51 passengers were drowned; and the rail crash at Ladbroke Grove Junction in London on 5 October 1999, which resulted in 31 deaths. These show that the

numbers of casualties encountered on 7 July 2005 are not remarkable in themselves. All mass casualty incidents require a multi-agency response and the majority will benefit, particularly in the immediate aftermath, on a response generated spontaneously from within the crowd itself to ensure that victims are helped and lives are saved.

Emergency managers and the planning policy they develop, however, often see the crowd as exacerbating the core problem—i.e. a train crash or a major fire—assuming that those involved will be prone, both individually and collectively, to panic and that external help will be needed to calm and control the situation (Furedi, 2008). This view is not upheld by the academic study of mass casualty incidents and other disasters; in contrast, such studies suggest that those caught up in the incident are more likely to remain calm and act rationally, helping and supporting one another as much as they can (Drury & Cocking, 2007). The existing academic literature widely suggests that the crowd should not be seen as part of the problem but as an additional source of assistance to professional responders and a valuable resource, able to provide additional manpower and to begin the recovery process spontaneously should there be a delay in the arrival of the professionals. This paper will argue that while a large crowd containing a high number of casualties may overwhelm the number of professional responders who are immediately available and the resources they carry, uninjured crowd members can act as a force multiplier, allowing the limited professional resources to be used where they will be most effective. As Furedi (2008, p. 658) states:

[T]he tendency to professionalise disaster response may deprive a community of an opportunity to develop its resilience and inadvertently reinforce a sense of passivity and helplessness. ... [A] highly centralized professional response cannot deal with every contingency. In the end, encouraging people to take responsibility for their own well-being is essential for an effective response to an emergency situation.

Distinctions between 'the crowd' and 'the public'

Before we continue, it is important to highlight the difference between 'the crowd' and 'the public' and how each is identified in this paper. 'The public' refers to the UK population in general, and assumes that any crowd comprised largely of 'the public' will be typical of it; for example, if within the population as a whole, approximately 2% have received formal first aid training at some stage of their lives, it can be assumed that this figure will be mirrored within any crowd, unless there is reason to assume that the individuals comprising that crowd are unrepresentative of 'the public' as a whole.

'The crowd' on the other hand refers specifically to the mass of individuals caught up in the incident itself and exists as a coherent group only at that time and place. While it will largely comprise members of the public as defined above, there may also be some individuals who have skills and roles specific to the situation, such as on-duty stewards and first aiders at a sporting event, concert or festival or security staff at a large shopping centre. This 'crowd' correlates to the 'community of circumstance', identified within the current community resilience policy of the UK

government's Civil Contingencies Secretariat, which shares a commonality only for the duration of the incident, in contrast to a 'community of interest' (such as worshippers at a local church or mosque, or members of an amateur dramatics group) or a community defined by geographic location, both of which share a common identity outside of the incident.

Addressing new threats to crowded places

Since the turn of the 21st century, the UK approach to combating the threat from suicide bombers has largely focused on strengthening physical security, by building barriers to entry and increasing the efficiency of screening technology, at airports in particular. The majority of this has been driven by the response to the failed suicide attacks of summer 2007, barely two years after the 7/7 bombings. Two car-bombs were placed outside the Tiger Tiger nightclub in London's Haymarket on 29 June, the second at the location where victims fleeing the first attack would be likely to congregate; fortunately, the devices failed to detonate. The following day, a suicide bomber with links to those who planted the devices in London attempted to drive a Jeep laden with propane gas canisters into a busy Glasgow Airport terminal; the vehicle was prevented from entering the terminal by security bollards and, once again, the canisters failed to ignite as intended. These attacks cemented understanding that crowded places are becoming increasingly popular targets for Islamist attackers (Bell, 2007) prompting the then Prime Minister Gordon Brown to commission Lord West of Spithead, then Home Office Parliamentary Under-Secretary of State for Security and Counter-Terrorism, to suggest methods and measures required for protecting crowded areas, including transport infrastructure and critical national infrastructure from terrorist attack (Ellis, 2007). This review resulted in two fundamental recommendations. Firstly, in the short-term, there was a need for increased physical security around crowded areas and that physical resilience against terrorism was dependent on engaging with a wide range of local partners, including local authorities and businesses (HM Government, 2010a). Secondly, a more long-term approach to protection has been provided by the Centre for the Protection of National Infrastructure (CPNI), an interdepartmental government agency that has developed and runs free briefings and training courses for architects, engineers, planners, designers and other built environment stakeholders to encourage the strengthening of existing hard security measures; the CPNI also provides more general security advice to businesses and the private sector.

In addition, considerable work has gone on within the emergency services to strengthen operational procedures and introduce specialist equipment that will improve the response to such attacks, some of which is discussed below. Neither these, nor the physical security measures discussed above, however, addresses how it might be possible to build resilience to an attack that has not been prevented by increasing the ability of the general public, and therefore the crowd present at such an incident when it occurs, to cope, though many previous studies (Jones *et al.*,

2004, 2006) show that doing so can help to minimise the psychological damage caused by the attack to both society as a whole and to the individuals directly involved.

In Israel, the ability to clear away the visible signs of damage caused by suicide bombings and to restore the area to normal as quickly as possible is a key part of the initial response, ensuring that the timeframe of the incident is kept as short as possible (Charlaff, 2008a). The operational procedures of the Israeli Emergency Medical Service, Magen David Adom, aim to have the first ambulances at a mass casualty event of up to 60 casualties within 5 minutes, and the scene cleared of all casualties within the first hour. This recognises the psychological importance of a fast and efficient response, as well as its importance to saving lives.

The speed of the professional response can be impaired in mass casualty terrorist attacks, however: professional responders may be unable to reach the casualties due to concerns over secondary devices, which may require them to hold back until the scene has been declared safe, or because the attackers are themselves preventing access to the scene. During the Islamist attacks on Mumbai in India in November 2008, which resulted in 175 deaths and more than 300 injuries, hostage situations at the Taj Mahal Palace and Tower Hotel and the Chabad Lubavitch Jewish centre (also known as Mumbai Chabad House) were sustained over 48 hours, with access denied to professional responders. Victims, including those who required urgent medical care, were left to fend for themselves and each other (Rabasa *et al.*, 2009).

If future attacks are likely to aim for mass casualties, more needs to be done to understand what happens to the victims of such incidents and to enable them to help themselves better. To what extent is it possible to embed resilience in the general population, enabling the crowd to respond to its own needs, at least in the initial phase? Emergency management circles have begun to adopt the term 'zero responder', coined by Professor Louise Lemyre of Ottawa University in Ontario, Canada, for such individuals, to distinguish spontaneous helpers from the professional first responders who are called to the scene (Lemyre, 2010); we shall adopt these terms—'zero responder' and 'professional first responder'—throughout to distinguish between the two. The ability of zero responders to emerge from the crowd is dependent on a number of interrelated factors, including an awareness of what is happening and how the situation is likely to develop, training in specific subjects such as first aid and safe evacuation procedures, combined with the availability at the incident site of self-help equipment such as first aid packs and fire extinguishers.

The immediate response: finding resources on the ground

Previous mass casualty incidents provide many lessons on the benefits of seeing the crowd as a potential solution rather than part of the problem. Firstly, it is important to remember that no matter how efficient and how well-managed is the response to any major incident—particularly one that is unexpected—professional responders cannot arrive at the scene instantaneously: they need to be called, dispatched, make their way to the incident site (possibly through congested traffic) and plan to enter potentially dangerous environments without putting their own lives in danger.

Their response may be dependent on equipment which, once at the scene, takes time to set up. The number of casualties requiring their attention may well overwhelm the personnel and resources available, at least until reinforcements and resupplies can be sourced.

The Madrid train bombings began at 07.38 hours on 11 March 2004, when four bombs exploded on a train just inside Atocha station, followed a minute later by three bombs on a train, 500 metres away. Two minutes later at 07.41 hours, a further two bombs exploded on a train at El Pozo del Tío Raimundo station and a minute after that, another on a train at Santa Eugenia station. It was not until 08.00 hours that emergency relief workers began arriving at the scenes. They were faced with 2062 casualties, of whom 83 were in critical condition (Bristow, 2004).

During the London bombings of 7 July 2005, the first 999 (emergency) call requesting assistance to Aldgate Street station was made at 08.51 hours, approximately a minute after the first device exploded, by a London Underground staff member. The first ambulance arrived at 09.14 hours, 23 minutes later.

The bomb in the tunnel between London's Russell Square and King's Cross underground stations exploded at around 08.53 hours; the last casualties were not transferred to hospital until 12.12 hours, more than 3 hours later.

The initial chaos following such attacks means that information flow in the immediate aftermath is difficult: in London, four simultaneous bombings combined with the fact that three had occurred deep underground meant that controllers were initially unsure how many incidents had occurred as injured passengers emerged from the underground tunnels at different stations. It took time to establish where exactly incidents had occurred, which incidents needed which emergency services, and in what quantities (London Assembly, 2006). Furthermore, when professional responders did arrive on the scene certain protocols resulted in some holding back when it would have been safe to go forward. Survivors giving evidence during the Coroner's Inquest into the bombings found both this, and the fact that most firefighters do not possess advanced first aid skills, difficult to understand (HM Coroner, 2011). Injured victims within the carriage, and during the initial stages of the evacuation, were dependent on one another until professional paramedics could arrive.

It is not unique to terrorism that the arrival of the professional responders—or of the appropriate professional responders—may in some situations be delayed. At the time of the Hillsborough Football Stadium disaster in 1989 it was not routine for emergency services, and in particular ambulance paramedics, to be present inside football stadia in significant numbers. Even when ambulances did arrive, they remained predominantly outside and casualties were ferried to them. The only emergency service typically represented in significant numbers at football matches of the time were police officers, whose primary task was to prevent pitch invasions by the hooligan element synonymous with the sport during the 1970s and 1980s. Like firefighters on 7/7, their first aid skills were limited and they were ill-equipped to assist or assess the casualties (Walsh, 1989).

Lessons taken from the Hillsborough disaster have resulted in a larger emergency services presence in today's sports stadia and at other large events such as music

concerts and outdoor festivals, as well as an increase in the number of stadium staff who undergo first aid training and volunteer first aiders required to be present. There will be more than 3000 first aid volunteers at the London 2012 Olympic and Paralympics Games, for example, many of whom will be stationed at the events where the need for immediate medical assistance is likely to be greatest, such as at equestrian and cycling events (Budgett, 2010). Controlling the paramedic-to-spectator ratio at fixed venues, however, is very different from ensuring immediate cover on more fluid networks such as mass transport systems. Placing police and paramedics on every tube train would be impractical, not to mention prohibitively expensive. A more realistic proposition, and one this paper aims to put forward as a viable model, is to embed the skills needed to cope with the immediate aftermath of an attack within the population so that within any crowd, be it a static mass inside a football stadium, a fluid crowd at a major shopping centre, or commuters travelling on the mass transport system, there is always a critical mass of people who can respond immediately until the professional help arrives.

Don't panic: an understanding of crowd psychology in disasters

Historically, the ability to utilise the crowd as a zero responder in times of crisis was challenged by a prevailing view that mass hysteria encompasses groups in times of crisis, with people adopting Darwinian characteristics where individual survival would become the only priority at the expense of the crowd. Thus the crowd would not facilitate assistance in times of crisis but have the opposite effect, hindering access to the most at need and creating panic that would cause more harm. As Richard La Piere suggested, 'danger may turn a passive audience into a shrieking, milling mass which clogs the aisles and jams the exits' (La Piere, 1938, p. 437; cited in Chertkoff & Kushigian, 1999). Panic, which Mawson (2005, p. 96) defines as 'inappropriate or excessive fear', was often thought to prevail, leading to illogical and dangerous consequences. John Drury sums up the premise of mass panic theorists when he suggests that they conclude 'human reactions to emergencies . . . lead to more problems (e.g. fatalities) than the danger that people are trying to escape from' (Drury, 2011, p. 198).

Later theories held that the commotion during a crisis does not reflect panic but a rational decision-making process seeking to garner the best possible outcome. For example, Mintz (1951) argued that individuals seek to be cooperative in a crowd as long as *the entire* crowd cooperates. Once someone seeks to act individually and gains a benefit from that action it makes no sense for the rest of the crowd to continue acting cooperatively, as they will be disadvantaged. Thus what appears to be mass panic may be a reflection of calculated risk; selfishness and individualism become the rational responses but make the concept of the crowd as zero responder difficult to comprehend.

More recent academic studies and other evidence suggest that solidarity and communal spirit appears to be far more prevalent than previously thought. During the Hillsborough disaster, for example, football fans trapped in the pens helped one

another to ‘unofficial emergency exits’ over 2-metre fences. Despite the predominant image of football fans at the time as violent hooligans, the crowd’s response was quiet and considered, with individuals assisting one another and calming the situation down (Drury *et al.*, 2009). Gary Burns, a survivor of the disaster, recalled a man helping him and encouraging him to, ‘slow down lad, take your time’ (Burns, 2011). The public assisted one another and carried the injured to the ambulances outside the stadium, preventing a potentially higher death toll.

At the evidence hearings for the Coroner’s Inquests into the 7/7 London bombings in 2010, Davinia Douglass (née Turrell), whose face was severely injured by one of the explosions, gave evidence in a written statement (HM Coroner, 2011) that her fellow passengers gave immediate assistance for her injuries and led her from the bombed carriage. Several examples of heroic and selfless behaviour can be found in contemporary media reports of the Mumbai attacks of November 2008, ranging from hotel guests telephoning rooms to warn occupants to duck for cover, to guests hiding or dragging others to safety through the ‘rabbit warren’ of corridors (BBC News, 2008a, 2008b). All indications from past emergencies suggest that the crowd will help itself; therefore, the more ability it is given to do so, the better (Drury & Cocking, 2007).

Historical precedent: home defence and civil protection

The concept of training the population in the skills needed to substitute for professional responders until help arrives (and therefore to ensure that such skills will be present in the typical crowd) has both historical and international precedent. During the Second World War, an extensive self-help attitude was adopted in the UK, with individuals who had not joined the military effort (mostly because they were too old, too young or women) taking on public safety roles to respond to incidents caused by German bombing raids. This included fire wardens—who put out fires and pushed the burning bombs away from buildings—and air raid wardens, who would hurry civilians into designated shelters (Holgate, 2004). At the peak of activity, in March 1944, more than 1.5 million men and women were volunteering, unpaid, for Home Defence roles to work alongside 400,000 professional civil defence staff, which included police officers and firefighters. An additional 5 million citizens were legally required to serve 48 hours a month as fire wardens (Woolven, 2008).

The organisations raised for Home Defence continued after the Second World War as a resilience measure against nuclear attack throughout the Cold War. This included in particular the Civil Defence Corps, which had Head Quarters sections, Wardens, Welfare divisions, Ambulance and First Aid sections; an Auxiliary Fire Service; a National Health Service Reserve; and Scientific Intelligence Officers. At the height of Civil Defence activities, there were 320,000 civilian volunteers plus an additional 200,000 serving critical industries (Woolven, 2008). The training they received proved invaluable in a number of emergency situations including severe flooding at Linton and Lynmouth in 1952, the East Coast floods of 1953, train crashes at Sutton Coldfield in 1955 and Lewisham in 1957, and a serious mudslide at Aberfan, Wales, in 1966.

It is important to note, however, that an element of widely accepted and believed risk may be needed before the public will volunteer their services and take an active role in resilience. It was not until the Munich Pact of 1938, by which Nazi Germany annexed the Sudetenland areas of Czechoslovakia, that the UK's volunteer network began to swell, as people realised the imminent danger posed by Nazi Germany (Woolven, 1998). Following the end of the Second World War, when concern that the Cold War might lead to a nuclear strike on the UK was a less believable threat than German bombing raids, the Civil Defence Corps struggled to attract volunteers in the numbers hoped for (Grant, 2010), though cities that had been heavily bombed during the war years, such as Coventry, generally saw higher rates of recruitment than those that had not. It was not until more credible new threats emerged, such as the 1950–1953 Korean War and the 1962 Cuban missile crisis, that volunteer numbers increased. More recently, hurricane warnings issued to New Orleans in the wake of Hurricane Gustav in 2008 were heeded more widely than both those that had been issued prior to the devastating arrival of Hurricane Katrina three years previously and also those that were issued to residents in Texas at risk from Hurricane Ike (Cole, 2008b), as residents who had personal experience of the previous events were more willing to believe that action was necessary.

Interest in Civil Defence in the UK petered out during the 1950s and 1960s, but similar models still exist, and are still effective, around the world, most notably in regions where the regular threat of natural disasters such as earthquakes (in China) and hurricanes (in many US states) galvanises the public to take action against a real and present danger. Wherever such volunteering is found, first aid skills generally form a large part of the training those volunteers receive (Cole, 2008a) yet despite our long history of IRA terrorism, first aid training has never been given much priority in the UK, perhaps because the small number of casualties generally encountered during IRA attacks meant that there was little role for the public in responding to such incidents. Where the public were seen to have a role at all, it was generally in spotting and reporting suspicious activity and this is where efforts to involve and train the public in responding to Islamist terrorism have also been focused in recent years.

In relation to awareness of suspicious activity, the National Counter Terrorism Security Office (NaCTSO) has devised Project ARGUS (Area Reinforcement Gained Using Scenarios), an initiative that aims to increase awareness of counter-terrorism issues amongst businesses and make communities more resilient to attacks (City of London Police, 2011). The ARGUS training packages focus mainly on how to plan and assist safe evacuations of large venues, but do not contain training in first aid; neither does the training for Project Griffin, a linked initiative that trains security personnel and other professionals, such as traffic wardens, to help the police with evacuation procedures. Griffin in particular, which includes advice such as avoiding glass hazards during an attack, would seem a natural home for basic first aid training, or at the very least the promotion of its worth and relevance.

The UK is virtually the only country in the European Union where training in such skills is not a compulsory part of the school curriculum. Despite its fundamental usefulness, first aid has only recently been added to part of the school curriculum at all, as

a result of lobbying by the British Red Cross's 'Life. Live It' campaign, and forms part of the optional subject Personal, Social and Health Education which does not lead to a qualification and is therefore not at the top of the agenda for most schools (British Red Cross, 2011).¹ Health & Safety guidelines require just one qualified first aider per 100 employees in low-risk environments, one in 50 for environments deemed to be moderate or high risk (Cole, 2009). Basic first aid is now included in driving lessons and theory tests, but there is no legal requirement for drivers in the UK to carry first aid kits, nor is there any requirement for drivers who qualified before it was introduced to take the additional lessons. At present, only around one in every 200 members of the UK population holds a currently valid first aid certificate and around 95% have never had any formal first aid training.

Yet the benefit of embedding first aid knowledge within the population is clear. Immediate treatment is vital in preventing death from traumatic injury, particularly the severe bleeding from traumatic amputations and penetration injuries that is a common effect of the type of explosive devices favoured by both the IRA and Islamist-inspired terrorists. Such catastrophic bleeding, as it is termed by the military, is a major cause of death on the battlefield, leading battlefield first aid training to focus strongly on stemming its flow (Dubick & Kheirabadi, 2010); however, despite the similar injuries likely to be caused by a suicide attack, and the increasing recognition within professional healthcare sector that the adoption of military practices has valuable application within civilian situations, few civilian first aid courses make catastrophic bleeding a priority, instead focusing on breathing difficulties and cardiac arrest. The use of tourniquets, for example, improvised examples of which saved several lives on 7/7, is not taught in civilian first aid. Immediate care is not only relevant to traumatic injury, either: following the 2002 Moscow siege, some of the victims choked to death on their own vomit and others choked after swallowing their tongues when gas was pumped into the theatre by the Russian authorities to disable the hostage-takers (Dolnik & Fitzgerald, 2008). Many of these victims may have survived had they been placed into the recovery position, a relatively simple first aid procedure that can be taught in minutes. More generally, initiatives to embed immediate care skills within the general population, such as the ability to recognise the symptoms of a stroke, have shown considerable improvements in the number of individuals recovering from such conditions (Wall *et al.*, 2008).

The value of first aid skills is well understood in Israel, where suicide bombers have detonated numerous devices in crowded places such as markets and nightclubs. As a result, Israeli emergency response frameworks are heavily focused on casualty management and this has led to a number of particularly interesting approaches, from specialist chemical, biological, radiological and nuclear (CBRN) response exercises in which the entire population takes part, to formal first aid training provided to the general population by the military (Charlaff, 2008b). In particular, there is a strong focus on what is known in Israel as 'market forces'—the ability of the general public to provide help and assistance to those injured in the attack with whatever resources are to hand. The name comes from an incident in which professional first responders were unable to reach injured casualties in the narrow aisles of a

market, and the market traders responded by using the tables from their stalls as makeshift stretchers to ferry the injured to the ambulances.

In recent years, this ability to harness a 'market forces' response has been formalised through the Multi-Casualty Response Vehicles (MCRV) owned by Magen David Adom (MDA), the Israeli Emergency Medical Service. When MDA is called to respond to a multi-casualty incident it sends not only ambulances and paramedics, but also an MCRV packed with additional resources that can be used by anyone present at the scene. This benefits in particular those casualties suffering from minor injuries who do not need to be evacuated to hospital immediately, if indeed at all.

This model works in Israel because the recognition of the importance of first aid and its utility during mass casualty incidents are high, as suicide bombings are common and therefore such a response is actioned frequently. Israel has been in continual conflict with its Palestinian and Arab neighbours since its formation, thus the Israeli public is acutely aware of danger and has vast experience dealing with mass casualty incidents (Halpern *et al.*, 2003); Israel is also at risk from earthquakes and severe flooding, which further galvanises the population to take first aid seriously. The situations in the UK and Israel are very different, but nonetheless Israel does offer a useful guide to the utility of widespread first aid training and the ability of the crowd to aid professional responders rather than drain their resources. The model shows that with the correct training the crowd at an incident site can be a very valuable resource, both before professional first responders arrive and in boosting their capacity once they do.

This ability to provide (and resupply) material resources at the incident site has been recognised and addressed in the UK in recent years. Following the issues encountered on 7/7 when, for example, ambulance crews at Liverpool Street station began reporting equipment shortages less than 20 minutes after arriving on the scene, the Department of Health has supplied more than 200 multi-casualty first aid kits to major transport hubs, with more being rolled out across England to additional transport hubs, shopping centres and other crowded places (Killens, 2010). They are designed to address the need for immediate first aid, providing supplies that can be used by station staff and the general public. In addition, National Capability Mass Casualty Equipment Vehicles have been introduced to Ambulance Services across England, equipped with resources to resupply professional responders at a mass casualty incident and specialist equipment needed to deal with traumatic amputations and other injuries likely to be encountered following a terrorist attack. Unlike the Israeli model, however, the UK vehicles and first aid kits generally aim to resupply the professional first responders, not to equip the public, who have little training or knowledge of how to use such equipment; if first aid training is not promoted as a life skill in general then it should at least be an important part of counter-terrorism awareness programmes, perhaps included as part of the previously mentioned Project ARGUS and Project Griffin packages.

If even a percentage of the crowd can act as zero responders, those requiring immediate medical assistance could be given an increased chance of survival. Survivors are more likely to remain at the scene and wait for professional first responders if they have an understanding of the advantages of doing so and are confident that

those around them have the knowledge and skills necessary to give them the help and assistance they need until the professionals arrive. Leaving the incident site to make their own way to hospitals and healthcare facilities may delay their access to treatment and, in the case, of biological, chemical or radiological contamination, risk spreading the contamination further and affect people further away from the initial point of release. This was recognised following the Sarin gas attacks on the Tokyo Underground, a lesson from which was that all staff should receive training in life-saving skills in future (Funato, 2005).

Arming the public with skills and knowledge

The long-term impact of the Comprehensive Spending Review (HM Treasury, 2010) and the Strategic Defence and Security Review (HM Government, 2010b) may result in sufficient cuts to frontline emergency services that the voluntary sector such as St John Ambulance, non-governmental organizations (NGOs) and private operators, may be increasingly relied upon to deal with periods of high-volume call-outs. The role of existing Community First Responders—a Department of Health-run scheme in which local volunteers respond to 999 calls reporting heart attacks and treat patients until professional first responders arrive—may need to be expanded, with some local ambulance trusts needing to rely on them more heavily and for a wider range of assistance. First aid and casualty management training currently given to Special Constables could also be expanded to help them deal with mass casualty incidents.

Local authorities' emergency planning departments might also consider some kind of knowledge capture of local individuals who have gained medical experience through military service or overseas humanitarian aid, as well as former and recently retired emergency services personnel, for whom small amounts of regular re-training and practice could be enough to enable professional responders to draw them in to provide additional capacity at short notice—e.g., current and former military medics, particularly those from Territorial Army units, who have had experience in Iraq or Afghanistan. Such individuals will exist in most communities (with the possible exception of some ethnic and cultural minority communities, but these may have their own relevant experiences), but their whereabouts is currently invisible to any response plan.

During the London bombings, three of which took place in underground tunnels that were difficult to access immediately, help had to emerge from within the affected crowd itself, but in other incidents, such as the above-ground and more easily accessible incident sites in Madrid and Mumbai, a wider spread of emergency response capabilities amongst the general public and surrounding businesses could have enabled some of those who might otherwise die at the scene to be saved and provide effective and immediate basic emergency assistance to all victims prior to the arrival of the emergency services.

Conclusions

Response to terrorist threats in the 21st century requires a new approach. The assumption that an attack will comprise an explosion, followed by a 999 (emergency)

call that summons professional responders to the scene, to which they arrive and treat casualties before dispatching them to hospital, fitted the old model of the IRA attack well, but when less conventional modes of attack are considered, such as mass casualty incidents, mass hostage situations and chemical, biological, radiological and nuclear (CBRN) dispersals, in which the normal response chain is broken or interrupted, the complexities increase.

If the UK is to be sufficiently resilient to the threat of suicide terrorism, current thinking needs to be extended beyond professional first responders to ensure that the resources needed to deal with a mass casualty incident, including knowledge as well as equipment, are easily and immediately available to those caught up in the incident itself. The evidence from past incidents explored in this paper shows that the affected crowd is frequently capable of taking a proactive role in the response, with individuals providing aid and reassurance to one another until the professionals arrive and can enter the incident scene. Providing the general public and therefore the crowd with the means to assist—in terms of accessible equipment and the knowledge to use it—may prove to be much more important in future terrorist attacks than it has been in the past.

The evidence given at the Coroner's Inquests into the 7 July London Bombings, and the media reactions to it, show that today's society expects professional first responders to be on the scene immediately and to multitask once they arrive; it expects police officers and firefighters to have similar skills to ambulance paramedics. While ensuring that they do has considerable value in itself, both professional emergency planning and community resilience initiatives need to move beyond dependence on professionals to more self-reliance. During a major incident, the affected crowd or community needs to come together to free up the emergency services to focus on the most severely in need. This form of self-reliance, drawing together for the protection of each other, is a model of unified assistance that proved effective during the Second World War, has shown value internationally in countries prone to earthquakes (China) and hurricanes (the United States), and with the right planning could prove equally effective in the UK today.

Note

1. PSHE is currently set to become a statutory subject from September 2011.

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