Pan London Major Trauma Networks: Response to Mass Casualty Incident

Version 1.4 March 2016

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Distribution List

NHS England

National Clinical Director of EPRR
National Clinical Director of Major Trauma

Clinical Reference Group
- Major Trauma
- EPRR
- Adult Critical Care

London ODN Leads – Trauma, Burns, Critical Care, Commissioning
London EPRR

Major Trauma Network Clinical Directors
Major Trauma Network Managers
Major Trauma Centre Clinical Leads
Trauma Unit Clinical Leads
Chief Executive of Acute NHS Trusts

Royal College of Emergency Medicine
Royal College of Surgeons of England
Royal College of Anaesthesia
Royal College of Paediatrics and Child Health
Intensive Care Society / Paediatric Intensive Care Society
Faculty of Pre-hospital Care

London Ambulance Service
South East Coast Ambulance Service
South Coast Ambulance Service
East of England Ambulance Service

Police
British Transport Police

Fire and Rescue

London Transport
London Underground

London Military Liaison

London HEMS
Kent, Surrey and Sussex HEMS
Thames Valley Air Ambulance
Hampshire & Isle of Wight Air Ambulance
Essex and Herts Air Ambulance

Glossary / Definitions

Biological – pertaining to infectious agents used in weapons. Examples being Anthrax, Plague, Typhus.

CBRN = Chemical, Biological, Radiological and Nuclear

Chemical – pertaining to chemical weapons. These may be lethal or non lethal agents including – nerve, choking, blister, and incapacitating agents.

Children and Young People – this group refers from birth to 16th birthday.

Code Red – the identification of a patient requiring blood transfusion

HEMS – Helicopter Emergency Medical Services aka Air Ambulance

IED – Improvised Explosive Device. An explosive device made from basic components used to deliver either shrapnel or other agents. The 'home-made' bomb.

Local Emergency Hospital – an acute centre that does not meet Trauma Unit criteria.

Major Incident – any occurrence that presents serious threat to the health of the community or causes such numbers or types of casualties, as to require special arrangements to be implemented.

Major Trauma Network (MTN) – a group of hospitals in a hub and spoke model with a Major Trauma Centre supporting several Trauma Units or local emergency hospitals

Major Trauma Centre (MTC) – a hospital with all the acute / surgical/ rehabilitative services on site for major trauma

Mass Casualty Incident - an event with casualties in the 100s where the normal major incident response must be augmented with extraordinary measures

MERIT – Mobile Emergency Response Incident Team. Doctors and Nurses with pre-hospital expertise mobilised to the scene.

Nuclear – radiation agents made from high quality fissionable materials.

ODN – Operational Delivery Network. A commissioning / clinical led co-operative group drawing together services, often in a 'hub and spoke' model.

Radiological - pertaining to weapons. Made from radioactive material that may not be of high or weapons grade. This would be the 'dirty bomb'.

TARN – Trauma Audit and Research Network. A database for trauma care and research, producing regular quality audits.

Trauma Unit (TU) – typically a District General Hospital with an Emergency Dept (A&E) that has met a set of national criteria and submits data to TARN for audit.

Amendments

Date	Amender	Version	Section Amended with details
18 Jan 2016	WRIGHT	1.0	Consultation Version
25 Jan 2016	WRIGHT	1.1 / 1.2	General wording post working group closed consultation. Re-order of key topics
March	WRIGHT	1.3	Final for release
29 March 2016	WRIGHT	1.4	Indexing and Pagination Update

Foreword and Acknowledgements

Following the introduction of Trauma Networks to London in 2010 the opportunity for cross network collaboration and mutual support has never been greater. The threat of a mass casualty incident in the capital remains high and this plan draws together principles of how the networks would support each other. The interactions with other key organisations, the mutual use of air ambulance support and the use of out of London ambulance services is described. It is not designed to replace trust major incident plans but to supplement them in the event of a mass casualty event. It should be read in conjunction with :
London Resilience Partnership – Mass Casualty Framework V3.2 August 2015
Kelvin Wright ***2016***

The following paragraph taken from the London Mass Casualty Framework 2009 provides a concise summary of the key elements of planning.
Dealing with a mass casualties incident requires the planning, cooperation and response of numerous partner agencies. These types of incident have the potential to rapidly overwhelm services and careful pre-planning and a coordinated response has been shown to provide the best outcome for casualties.
"Local communities must take the lead in developing incident command systems for initial management of such events. Hospital and pre-hospital providers play a key role in such planning. Ultimate management and disposition of large numbers of casualties […] cannot follow standard patient management protocols; new protocols are needed." (Severance, 2002)
"a properly and practically designed MCI (Mass Casualty Incident) plan, good compliance of responders, and a strong support system of responding agencies are the most important factors for successful emergency response to any MCI."
(Wen-Huei *et al*., 2008)

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The chair would like to thanks all those from the four London Trauma Networks, London HEMS, London Ambulance Service, Operational Delivery Networks, Kent, Surrey & Sussex Air Ambulance who contributed to this work.

Background

Overview of Trauma Networks

Since 2010, London has been served by 4 Major Trauma Networks –

The North West London Trauma Network
The North East London Trauma Network
The South West London and Surrey Trauma Network.
The South East London and Kent and Medway Trauma Network

The distribution of these networks is shown in appendix 1.

Following on from national work and a drive to improve the care of the severely injured patient, there has been a keen drive to ensure the right patient reaches the right hospital in the right time. This has meant a move away from patients being taken to their nearest A&E department and instead taken to the most appropriate hospital. This may be a Major Trauma Centre or a Trauma Unit. This is a move away from traditional thinking but ensures that the most severely injured patients including children and young people are taken to a centre that is used to dealing with their injuries.

Each of these networks comprises a Major Trauma Centre (Royal London Hospital, St Mary's Hospital, King's College Hospital, St George's Hospital) supported by Trauma Units. These have governance through the Operational Delivery Networks with regular peer reviews and a network Clinical Director.

Trauma patients with an Injury Severity Score of greater than 15 are ideally taken to a Major Trauma Centre using the pan-London Triage tool by either the London Ambulance Service or an air ambulance (HEMS) service.

Trauma networks have an integrated system for ensuring that those patients under-triaged to a Trauma Unit have rapid access/transfer to a Major Trauma Centre.

Within the Major Trauma Centre exist all of the acute services required to care for the severely injured patient. The multidisciplinary teams consist of those required in rehabilitation as well as acute / critical care.

Air ambulances deliver enhanced medical care teams and other resources to the scene and allow for stabilisation and rapid transfer from scene to the appropriate facility.

Trauma units play a major role in the management of those cases not requiring the services of a Major Trauma Centre as well as in taking their local patients back when they no longer need the Major Trauma Centre. This hub and spoke model allows for

forward flow to continue by the flow of patients back to their own geographical areas.

Planning Assumptions

The reader is familiar with the London Resilience Partnership Mass Casualty Framework Aug 2015

The reader has access to http://london.gov.uk/about-us/organisations-we-work/london-prepared/planning-emergencies-capital

All MTNs have a major incident plan based on the current level of threat assessment which is linked to other emergency plans eg CBRN.

Each of the London Trauma ODNs is adopting a consistent approach for service and network surge and escalation. This approach will be reflected in individual NHS Hospital and Trauma Services plans.

All hospitals will have a background level of activity at initiation of the plan

A mass casualty event is likely to be either one 'big bang' or several localised events.

The need for national direction i.e. COBR exists in a mass casualty event from an early stage. This should be no later than 1 hour.

London Ambulance Service will have an oversight of general demand including trauma activity across the capital.

The receipt of 8 major trauma patients per hour signifies a large impact on an individual Major Trauma Centre infrastructure. In a TU this is likely to be considerably lower.

With 4 Major Trauma Centres in London patients should be distributed from an early stage i.e. potentially, 4 major trauma patients in an hour will trigger the use of an adjacent facility. (aka Surge recognition)

In a multisite incident or one where terrorist activity is involved, access to some MTCs or TUs may be restricted.

The ambulance service will be extremely busy and inter-hospital transfer will not occur within normal timeframes.

Plans need to be in place to ensure patients can be safely managed in their initial hospital for several hours after the incident is declared. 'Stabilise and Admit' versus 'Stabilise and Transfer'. For those patients who require transfer for specialist intervention, the PTS provider should be utilised.

There is likely to be a prolonged recovery period for the NHS during which all non-urgent elective work will need to be managed as per local area plans. Primary Care and Urgent Care should expect to see higher acuity patients in the recovery period in order to alleviate pressure on the acute trusts and the Ambulance Service.

Military personnel will NOT be available in large numbers in the first 72 hours due to tasking elsewhere, although high-level advice will be available via formal channels.

All healthcare providers (public, private, independent and voluntary) will have a supporting role in mass casualty situations. They should review local operating policy and infrastructure.

Trauma Units will be required to take P1, P2 and P3 casualties.

Mass casualty incidents can involve children and their needs must be considered in planning.

In the event of a mass casualty incident involving children it is anticipated that there will be a significant proportion of P1 injuries. This is related to use of non age specific triage tools and the desire to remove children from the scene.

Where the number of children overwhelms the MTC capacity children may present at hospitals who are not used to dealing with seriously injured children, therefore hospitals must cater for children and young people in their Major Incident Plan.

Other Useful Documents

Austrauma Plan
November 2011, Version 1N
Australian Health Protection Principal Committee

London Mass Casualty Framework
August 2015

NHS England EPRR Framework
March 2013, Version 2.0

The Medical Response to Multisite Terrorist Attacks in Paris
Lancet Viewpoint Nov 24, 2015

How Does Casualty Load Affect Trauma Care in Urban Bombing Incidents ? A Quantitative Analysis.
Asher Hirshberg, Bradford G Scott et al
Journal of Trauma, April 2005, p686-695

Clinical Guidelines for Use in Major Incidents
East of England

Command and Control

Activation of this Plan

Based on their assessment at the scene, London Ambulance Service (LAS) will declare a Mass Casualty Incident and will notify NHS England London Region.

Activation of the Mass Casualty Framework will occur when the number of casualties exceeds local response capabilities beyond the Major Incident Plan. (this may be from two hundred to several thousand)

NHS England(London) will activate the Mass Casualty Framework based on their assessment of the situation. A dynamic approach to the situation, where developments are anticipated, rather than merely responded to, will be needed.

It is necessary to take into account the dynamics of the incident, the nature and severity of the trauma suffered, the ratio of ambulance/medical resources available, and the accessibility and appropriateness of clinical expertise/resource available, within the critical timeframe, in order to reduce mortality from injury. Therefore, it is difficult to map options against fixed casualty thresholds, and the options that are implemented will vary from one scenario to the next.

Once a mass casualty incident has been declared, all relevant response organisations will activate their own Major Incident plans (if they have not already done so) and the Metropolitan Police Service (MPS) will convene a meeting of the Strategic Co-ordinating Group (SCG).

Co-ordination of resources

In the event of a Mass Casualty Incident in London, tried and tested command and control arrangements will be implemented within every responding agency, in accordance with the LESLP and the London Resilience Command and Control Protocol.

In line with the Command and Control Protocol, a meeting of the Strategic Coordinating Group will be convened and chaired by the police. This group will be responsible for setting the strategy for London and enacting strategic level decisions regarding the response.

The London multi agency Command and Control structure, with corresponding lines of communication will operate in a mass casualty event, as with any other major incident with a sudden onset.

Trauma networks must develop clear lines of communication within their networks between the MTC and TUs.

An early decision as to the use of hospitals for primary incident or business as usual i.e. STEMI / HASU needs to be taken.

Cabinet Office Briefing Room (COBR) will provide national oversight

Strategic (Gold) will provide regional oversight

Tactical (Silver) will provide local oversight

Operational (Bronze) will also provide local oversight under Silver.

Mutual Aid Requests and Management

A Mass Casualty Incident will quickly swamp resources requiring aid from adjacent ambulance services as well as adjacent trauma networks. Depending on the scale of the incident it may be necessary to utilise national resources in support. This would be particularly true in a major burn incident. The activation of mutual aid will be via NHSE command and National Ambulance Co-ordination Centre.

The LAS will coordinate the movement of all pre-hospital mutual aid resources within London.

The Trauma Networks supporting London will include but are not restricted to – The Sussex Trauma Network, The Wessex Trauma Network, East of England Trauma Network.

Incident Roles and Responsibilities

Generic roles and responsibilities for responding to major incidents are covered by the LESLP manual. The document can be found here: http://www.leslp.gov.uk/.

Additional agencies have specific guidelines and procedures to respond to incidents which would apply in mass casualty situations.

Major Trauma Centres

The Major Trauma centres will receive P1, P2 and P3 patients as triaged and transported by the on-scene services.

The ***aim*** will be to deliver the P1 and P2 patients to the MTCs in order to avoid secondary transfers.

The MTC will provide an incident control team with a network-wide remit to advise clinical staff in TUs. This should comprise a senior surgeon and intensivist and paediatric trauma surgeon.

There must be a mechanism in place for pan-network communications to aid in local command and control.

Effective reporting back to LAS to advise on capacity and need for support must occur.

There should be the facility for additional Critical Care, Holding and Treatment areas to allow for local increase in capacity.

The 'Major Incident Plan' must allow for 'Mass Casualty Supplementation'

Post the initial incident, the MTC will co-ordinate patient movement across the network in conjunction with TU teams to ensure patients are moved in to receive treatment and out to receive on-going care when applicable.

Trauma Units

Primary role is to deal with **all** presentations across all triage categories and ensuring appropriate triage, treatment and transfer.

No Trauma Unit or Local Emergency Hospital can refuse any patients resulting from the incident or other patients.

Accept P1, P2 and P3 patients who arrive via pre-hospital care providers and by other means.

Liaise with their Network MTC Major Trauma Consultants with regards to the best care for patients, accepting that patients who would normally be transferred to the MTC may need to stay within the TU for part or all of their care.

Liaise with the designated MTC Clinical Lead/Major Trauma Centre Command to ensure a prompt and efficient flow of major trauma patients across the Network which could include transferring suitable patients out of the MTC, with patient safety remaining paramount.

Where directed by NHSE, the Network or the MTC to liaise with a specified out of area MTC with regards to the best care for patients, which may include agreeing transfer arrangements to that or another MTC.

Transition back to normal business
Work with the MTC and other TUs to provide, where necessary, staff to accompany patients being repatriated to them for on-going care.

Work with the MTC and Network to assist in repatriating patients back to their nearest hospital within an acceptable timeframe.

Ambulance Services

The management of mass casualty should ensure all patients, either directly affected by the incident or those with non-incident related urgent and emergency care needs continue to receive safe and high quality standards of care. The ambulance service will prioritise casualties from the event then Red 1 or 2 cases. Category C1-4 will not receive a front-line response.

In the event of a London based mass casualty incident the London Ambulance Service NHS Trust (LAS) has responsibility for coordinating all movements and transportation of casualties.

The LAS will have a dedicated team of Telecommunications Dispatchers within the Incident Coordination Centre (known as the SOC - Special Operations Centre) to ensure telecommunications with receiving hospitals, advising them of the declaration and keeping them updated with the current situation and patient movements.

Nominated hospitals will be advised of the incident in the standard format.

Where resources allow the LAS will provide a Hospital Ambulance Liaison Officer (HALO) at nominated hospitals.

Alerting messages from scene/ambulance to hospital for individual patients are likely to be vague or not occur.

The LAS will continue to monitor capacity at all nominated hospitals and across the trauma networks.

Secondary Transfers
Patient transfer requests received during and immediately after the incident phase are likely to incur significant waiting times. It is expected that each trauma network has a nominated trauma coordinator to oversee patients within their network. Should the need arise to move a patient from a Trauma Unit to the MTC the coordinator will contact the Trauma Network's Patient Transfer Service providers using the routine telephone process and agree an appropriate time frame with a senior clinician.

Movement of non-trauma patients to alternative sites should only be considered as a last resort when all surge capacity is exceeded.

Networks should consider the use of hospital-based patient transport services. For children this should include CATS and STRS (paediatric retrieval services). These services will not be able to offer their usual level of response and alternative plans should be formulated i.e. local escort/transfer.

Business As Usual
Where possible the LAS will utilise alternative hospitals other than those designated to receive incident casualties for normal business.

Consideration will be given to the transportation of STEMI/ACS/HASU patients to standalone speciality units as well as maximising the use of all other appropriate care pathways

All hospitals should be prepared to continue to receive non incident related patients throughout the duration of the incident phase and during the recovery period

The recovery period for hospitals will be agreed with NHSE and the flow to them managed accordingly

National direction (COBR) may dictate the suspension of business as usual services.

Helicopter Emergency Medical services (HEMS)

During a major or mass casualty incident air ambulance aircraft and personnel can fulfil multiple roles. **Deployment and tasking will be via LAS control**.

1. **Tactical scene assessment from the air** - On initial approach to the scene the aircraft is ideally placed to perform a detailed reconnaissance of the entire scene. From a tactical point of view (silver command), this early information can be useful for establishing effective command structures. As soon as

reasonably practicable an air ambulance aircraft can be used to carry the Ambulance Forward Incident Officer (bronze command) over the scene for an assessment regarding deployment of ground and air resources, rendezvous points, triage areas, HEMS helicopter landing areas etc.;

2. **Deployment of helicopter crew to scene (difficult or remote access)** - Initial command from the Ambulance Service (Forward Incident Officer / Bronze Command) can be established in any remote location and effective communication links can also be set up directly from the scene. Rapid situation reports can allow Ambulance Control to send appropriate resources, including external agency resources such as Fire Service, Police, Urban Search and Rescue and Mountain Rescue personnel.

3. **Deployment of medical/surgical/trauma/MERIT teams to scene** - Medical teams from the designated receiving hospitals can be flown to the scene. The speed of transfer by air means that teams can be flown directly from hospitals or areas outside the initial catchment area of the incident, leaving the closer hospitals fully staffed for the reception of casualties.

4. **Delivery of medical equipment/supplies to scene** - The aircraft can be effectively used to transport medical equipment and supplies to the scene if required.

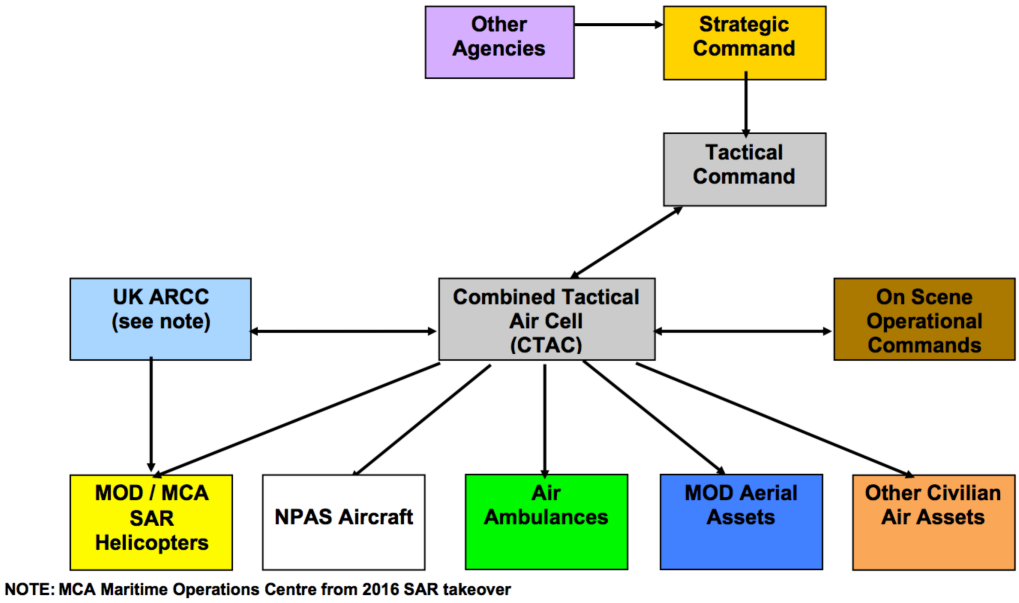
5. **Rapid transportation of time-critical patients to designated hospitals** - Due to the speed of the aircraft, patients can be transferred to appropriate receiving hospitals capable of delivering specialist definitive care. In addition, the flexibility of the aircraft also means that patients do not necessarily have to be transferred to the nearest receiving hospital, but can be flown further afield to ease the pressure on these hospitals.

Response Co-ordination

Due to the nature of mass casualty incidents and recent experience; it is highly probable that multiple air assets from multiple agencies will be required to respond. Co-ordination of this response will be determined by the level of incident:

6. **Level 1 Incidents** – Involve 2 air assets from two different agencies. Co-ordination will be conducted between the respective tasking authorities using normal processes.

7. **Level 2 Incidents** – Involve 3 or more air assets from two or more agencies attending enduring incidents where tactical command has been established. In such circumstances a Combined Tactical Air Cell (CTAC) will be formed in accordance with the Integrated Emergency Air Response Operations doctrine to prioritise air tasking in accordance with the Strategic Commander's intent and the Tactical Commander's objectives (below).



Critical Care Networks

Primary role is to deal with all critically ill patients following the incident.

The lead intensivist should coordinate and lead the care of all critically ill patients within their network in liaison with trauma surgeons and paediatric services as required.

As soon as the incident is declared all elective surgery at the site should cease.

Additional critical care clinicians and nurses should be brought on site to cope with increased numbers of patients than normal.

All external admissions potentially requiring critical care should be diverted away from the MTC.
Admissions to Critical Care need to be prioritized according to need. Triage may be necessary and this includes potential admissions from wards.

Initially it is preferable to care for all patients within a Critical Care Unit.

If the demand exceeds the number of beds available additional beds may need to be opened in escalation areas.

If patients are discharged from critical care as a consequence of this incident and before they would normally be transitioned to ward care, then appropriate handover to receiving teams is required.

Transition back to normal business

Many of the critically injured may require long stays in critical care. The impact on the normal running of critical care units may therefore be prolonged.

Avoidable demand for critical care (including elective surgery) should be reduced until such a time whereby there are no escalation areas open for the care of patients following the incident.

Secondary transfer of patients to TU and other more local MTC (outside London) may be necessary to relieve pressures or to bring patients closer to family and carers.

NHS England (London)

Activate Regional Mass Casualty response plan, and alert health trusts accordingly.

Support the Emergency Bed Service in managing critical care capacity.

Escalate to NHS England (National) and begin mutual aid process.

Notify London Resilience Team (if not already alerted through other agency)

Commission/support the commissioning by CCGs of appropriate support services (e.g mental health assistance) for medium and long term patient management if required.

Support NHS organisations in coordination of rapid discharge of acute patients into community based organisations where it is safe to do so to create bed capacity for patients from the incident.

NHS Provider Organisations

Activate local mass casualty arrangements.

Activate business continuity plans for patient capacity, patient transport as appropriate where normal services are disrupted due to the incident.

Clinical Commissioning Groups and Commissioning Support Units

Activate local mass casualty arrangements.

Liaise with local organisations to support new ways of working, accelerated discharge and surge management.

Commissioning of long term support.

Metropolitan Police Service

Coordinate the overall emergency response.

To provide specialist staff to assist with aspects of the incident as and where required, including investigators and hospital reception teams operating in support of Casualty Bureau Staff.

Assist in the designation of vehicles to act as emergency transportation at the request of the London Ambulance Service in support of patient transfer.

London Fire Brigade

Activate arrangements to allow for casualty recovery from scene as required.

London Resilience Team

Activate the London Strategic Coordination Protocol.

Transport Providers

Prepare to support patient movement outside of emergency vehicles at the request of responding emergency services.

Public Health England

Commission appropriate monitoring of patients and survivors health outcomes.

Local Authorities

Assist health organisations in the rapid discharge of patients.

Manage and develop a Humanitarian Assistance Response as per the arrangements of the Humanitarian Assistance Plans for London.

Support NHS organisations where specific support is directly required.

Progression & Recovery

During the First 24 hours

The first 24hrs as defined here for planning purposes begins approximately 4hrs after declaration of Mass Casualty Incident (MCI), following completion of a majority triage of all P1s to P3s to their appropriate designated Trauma Network MTCs & TUs by LAS, HEMS and equivalent.

Units that have been alerted by LAS directly should have activated their local Major Incident Plans. In addition, if an MTC within a network is activated, then all TUs within its Major Trauma Network will be put on standby levels accordingly. The following should form part of individual trust response.

1. **Additional Transport provider** – It is recommended that each MTC has potential provision for additional transport needs as and when an MI or MCI is declared, to assist with immediate urgent transfers of repatriations out to TUs within their network to free up NTC capacity. This Transport provision is not for attending the scene of the incident, but is also to work in conjunction with LAS Ambulance Liaison officers.

2. **Additional front line staff** – In line with business as usual, all non-resident on-call staff should be called upon immediately for on-site assistance and preparedness. These roles are already pre-defined by units internal MI Plans. (As per local MI plans - expected on site within 30min-1hr)

3. **Further Supporting front line staff –** It is recommended that MTCs/TUs have the capability to call upon all operational staff to support capacity pressures above and beyond business as usual or MI plans. This group of staff should be phased in after the initial management of the scenario to support the additional tasks in an MI & MCI scenario. It would be advised they attend site within 4-6 hours to support the second phase of the initial 24hrs of response.

4. **NHS Blood, Transplant & Antidote Supplies top up** – MTCs should have enough onsite blood to last 2-4hrs in a MCI event, provisions should be made for stock replenishment beyond that in the event of MCI, above and beyond that of normal Major Incident plans. Also to be prepared for repeat neighbouring MI or MCI events.

5. **A&E/Theatres/Trauma Ward stock Supplies top up** – MTCs should have enough onsite equipment to last 12hrs in a MCI event, provisions should be made for stock replenishment beyond that in the event of MCI, above and beyond that of normal Major Incident plans. Also to be prepared for repeat neighbouring MI or MCI events.

6. **Pharmacy stock Supplies top up** – MTCs should have enough onsite drugs to last 18hrs in a MCI event, provisions should be made for stock replenishment beyond that in the event of MCI, above and beyond that of normal Major Incident plans. Also to be prepared for repeat neighbouring MI or MCI events.

7. **Repatriation clearance** – Trauma Units not on Major Incident red alert should be prepared to receive all repatriations to their A&E departments' at 2hrs notice. This will potentially include patients not local to their area should a Major Incident or MCI occur near the location of a neighbouring Trauma Unit within the network, should they need to be protected to receive a higher number of P2s & P3s. See diagram below for MI & MCI Trauma Network Unit Standby controls.

Summary points of further consideration;

- Data dashboard and media management guidance.
- Stand-down does not mean stand down at all the hospitals, some may continue MI response longer and some may be ready to stand down
- If a trauma unit is ready to stand down they should inform major trauma centres
- Major Trauma centres are likely to remain under pressure, longer
- Recovery planning must start immediately, during the incident.
- Casualties under-triaged to trauma units and should be included in planning
- Repatriations to continue and be expedited until levels stabilised
- Continued liaison with multi-agency partners
- Transport arrangements
- Preparations for VIP visits
- Internal and external data requests
- Continued pressure on Business Continuity.
- Resource depletion (staff, supplies including pharmacy and IHSS etc)

Recovery and Resilience

This section details recovery principles. It is appropriate to action at Trust, Network and Regional / Supra-regional level. Recovery groups will happen at all levels in the NHS after a mass casualty type incident with central co-ordination.

Recovery Strategic Objective

A suggested strategic objective for the recovery phase is:

- To re-establish the affected organisation/s to such a level where they can contribute to the provision of critical services demanded by the public and healthcare community.

This overreaching objective would be supported by two sub objectives:

- To return to a near normal operational status as quickly as possible.
- To return to a state of readiness for any further incidents.

Having a separate recovery team will enable the organisation to concentrate on both the initial response and the recovery process simultaneously.

It is essential that the issue of recovery is given attention at an early stage, as it is very easy to become embroiled in the response to an incident and thereby miss opportunities to enable a swift recovery to normal operations.

The chair of the recovery group will be assigned by NHS England (London) and then the chair will request appropriate members of staff to join. This group will not become involved in the response to the incidents, but will focus on recovery.

The chair of the recovery group will be the primary owner and recorder of the recovery decisions in their Decision Log. It is vital that the recovery group is given overview of each key change enacted in response to an incident and the sequence of these changes. The recovery group will then reverse response changes when appropriate and to return the site to business as usual, taking advantage of any opportunities for long term improvement.

The recovery task group will consider these further points in relation to defining normality after a large scale incident:

- Normality after a large scale incident could be significantly different from normality before the incident. NHS England will need to take this new set of circumstances into account in its strategic planning and priority setting after the incident.

- A large scale and/or prolonged incident could have significant long term adverse impacts on people. These effects could be both physical and psychological and will need to be taken into account when dealing with staff, donors and others in the months following the incident.

- A formal process of reviewing lessons learned and applying these to the relevant incident plans, is important to improve future recovery operations.

Recovery Group Composition
The group should contain experts from each impacted area and so each recovery group will be different, dependent on the situation.

Members of the recovery group cannot also be members of the response group, due to the intense workload of each.

It should be recognised that staff on call, will in all likelihood be already responding to the incident, so other staff will have to be nominated to make up the recovery group.

A suggested list of departments to be represented in the recovery group (regional) is

1. Corporate Communications
2. Medical
3. Quality Assurance
4. IT
5. Human Resources
6. Finance
7. Hospitals
8. Facilities
9. Transport

Recovery Direction and Administration
The primary action for the group is to establish a strategy, which sets out the direction that all decisions can be measured against.

Accurate record keeping regarding recovery is of paramount importance.

- There needs to be a clear audit trail with comprehensive records of timings, notifications, decisions, actions and expenditure. It would be beneficial to use the same recording systems that have been used in the response for the recovery group as well.
- Review the viability of the organisation/s, to establish if they can be recovered.
- Establish time targets for key points of the recovery and a provisional timeframe for recovery of the site as a whole.
- Assess the impact on services and financial agreements and consider long term financial impacts and implications for the organisation.

1) The aim should be to recover critical services/activities first.
2) Monitor availability and demand for products and services to identify gaps to ensure that NHS England (London) is not an unnecessary constraint on the wider NHS.
3) Re-establish normal working practice.

Stock

Urgent priority should therefore be given to restoring stocks as quickly as possible. Consideration should be given to the impact of replenishing stock in the affected region at the expense of the wider NHS.

Close liaison with hospitals and information about their stocks will be vital, including: critical consumables, fuel

Discussions with suppliers/contractors on the restoration actions should be held considering:

The availability of suppliers/contractors that are required for critical activities

The resilience of suppliers/contractors - if this is unsatisfactory, consider sourcing alternatives

Equipment

Arrange for inspection/service/replacement/recalibration as required.

Staff

- Provide support to staff that have been personally affected by incident.
- Review minimum staffing requirements and identify any gaps to replace staff who will not return to work.
- Manage use of any volunteers.
- Monitor annual leave, dependent care leave, sick leave and other reasons staff may not be at work.
- Review any backlog of staff related information (DBS, qualifications, etc.) and arrange staff training where required.
- Update key emergency contact and On Call rota information

Communication

- Ensure key stakeholders (especially hospitals, users of products and services, and key suppliers) are kept fully informed regarding recovery changes and progress.
- Acknowledge staff contributions and those of external partners, contractors, suppliers, volunteers etc.
- Provide regular updates via Command and Control, intranet, external website and Connect.
- Offer reassurance, advice, guidance and access to Occupational Health as appropriate.
- Review communications plans.

- Keep the public, patients and staff appraised on restoration plans.
- Reassure the public and staff of a continuing service.

Information

Restore information

Back-up / restore core information as required:

- Staff records.
- Accounting/payroll records.
- Donor records.
- IT systems.
- Paper based systems.
- Any other key system/data.

Premises

- Security - Review arrangements
- Contamination - Identify areas that require deep clean/decontamination and initiate cleaning including removal of any waste products
- Maintenance - Identify and arrange for maintenance work to be carried out, ensure that alternative facilities are available if necessary

Restoration

If any facilities have been used for multi or alternative purposes consider implications of reverting to original purpose

In cases of partial/total relocation of services consider implications to fully restore services

Mutual Aid Arrangements

- Review agreements with other organisations regarding staffing, use of facilities and supplies.
- Establish new agreements with organisations if previous arrangements are no longer viable.

Lessons Identified

- Review and update processes and activities.
- Share best practice and learning with other health partners.

Record Keeping, Incident Logs and Post Incident Reports

At all levels of command, it is necessary to clearly document the appointment of Incident Managers, and this must be done at the time of appointment or change as part of the Incident Log.

The management of an incident will ultimately result in some form of record of the events that unfolded in bringing about a successful conclusion to the incident. These records may take one or any of the following forms:

- Minutes
- Chronological Logs

- Personal Logs
- Decision Logs
- Emails
- Maps
- Flip Charts
- Computer Entries
- Photographs
- Press Releases and Reports
- Audio Records

It is important to remember that any records of events are submissable as potential evidence in the event of a Public Inquiry or Legal proceeding. All entries must be clear, intelligible, and accurate.

Incident Log Book

Across all levels of incident type, where an incident has been notified or declared it will be the responsibility of all involved in the management and recovery of the incident, to create and maintain an Incident log. This log will capture all contemporaneous notes (notes made at the time or shortly after an event or incident).

All decisions and risk assessments will be recorded in this log. The log will be handwritten and each decision or risk assessment outcome will be recorded, together with the rationale for making it, why other options were not deemed suitable, the time and date it was made, and the signature of the person making it.

The log should be completed at the time and will capture all key events during the incident.

Suggested Agenda for First Recovery Group Meeting

The following is a list of points that could be put on the initial agenda for any Recovery Co-ordinating Group meeting.

1. Introductions
2. Terms of reference for the group
3. Membership
    a. Responsibilities and authority
    b. Other agencies that may be required
4. Briefing / progress report, including the latest impact assessment and the response strategy (brief overview, keep concise)
5. Agree recovery strategy (including detailed objectives and targets as necessary)
6. Immediate actions / or urgent issues related to the incident
7. Recovery action plan formulation and delegation of tasks (including deciding what Sub-Groups are required)
8. Priorities for action
9. Any other issues
10. Schedule of meetings

Preparedness Roles and Responsibilities

It is the responsibility of all agencies to prepare and practice for the use of this plan.

Major Trauma Centres

Should regularly check and update their major incident policy.

Must consider the threat of terrorist attack either in London or elsewhere within the Network.

An expectation that up to 100 walking wounded patients could be received plus more severely injured patients.

That usual lines of communications within the Trauma Unit, the Network MTC and/or specialist centres may be down or inundated.

Action cards for each in house specialty including Emergency Department, Theatres, Surgical Teams, Radiologist etc.

Develop the role of a senior surgical floor walker to liaise with internal speciality leads and the MTC specialists. This will also be available to provide advice to the Trauma Units.

Work with the Critical Care Network to ensure a visible real time bed status is in place for intensive care and high dependency patients.

Work within their Trauma Network to develop a robust Network Plan which may include:

1) a system for tracking patients across the Network during the MCI and during/after transition to normal business
2) communications with press agencies, patients, relatives and the worried well
3) agreeing with relevant Clinical Commissioning Groups and NHS England (NHSE) their supporting role with repatriating patients/displaced patients after the event.
4) agreeing with role of local emergency hospitals/minor injury units during a MI / MCI

Ensure all appropriate surgeons have completed a recognised Damage Control Surgery course. Damage Control Principles are in appendix 2.

Ensure an up to date contact list is available, setting out who to liaise with during the incident itself on a clinical, EPPR, and executive/management level during the incident itself, transition back to business as normal, for repatriations, non trauma transfers out and post incident.

Ensure that adequate supplies of compressive dressings, tourniquets and novel haemostatics are available.

Major Trauma Centres must ensure that within their networks the key areas of consideration:

> *Resuscitation and Paediatric Intensive Care Capacity*, including in time of overwhelming demand creating intensive care capacity for children within the adult setting.
> *Triage* – an understanding of age specific physiological variables. The use of SMART tapes may assist.
> *Clear pathways and guidance* for those hospitals not used looking after children who are seriously injured. Telephone advice will need to be both paediatric specific and trauma.
> *Confidence of non paediatric specialties*: Outreach to Trauma Units, training and guidelines need to be provided to assist with the confidence of non 'trained' specialties.
> *Equipment*: To be able to provide Damage Control Resuscitation to multiple children, including Paediatric ***code red*** guidelines.

Trauma Units

Each Unit to review their Trust Major Incident Plan in the body or action cards:

Consider the threat of terrorist attack either in London or elsewhere within the Network.

An expectation that up to 100 walking wounded patients could be received plus more severely injured patients not normally with the TU's cohort of injured patients.

That expertise may need to be sought via telephone consultation for specialist advice with respect to multiple patients injured with burns, chemical attack, gunshot wounds, limb amputation and/or patients requiring plastic surgery intervention.

Liaison with the primary Major Trauma Centre and co-located Trauma Units and, where necessary, other Major Trauma Centres (MTC).

That usual lines of communications within the Trauma Unit, the Network MTC and/or specialist centres may be down or inundated.

Action cards for each in house specialty including Emergency Department, Theatres, Surgical Teams, Radiologist etc.

Develop the role of a senior surgical floor-walker to liaise with internal speciality leads and the MTC specialists.

TUs and Emergency Hospitals within the region who are relatively unaffected by the casualty surge are likely to be required to receive redistributed patients from non trauma specialties, such as stroke/cardiac etc. This could be directly in from pre-hospital care providers or from affected MTCs or other TUs.

Work with the Critical Care Network to ensure a visible real time bed status is in place for intensive care and high dependency patients.

Work within their Trauma Network to develop a robust Network Plan which may include:

1) a system for tracking patients across the Network during the MCI and during/after transition to normal business
2) communications with press agencies, patients, relatives and the worried well
3) agreeing with relevant Clinical Commissioning Groups and NHS England (NHSE) their supporting role with repatriating patients/displaced patients after the event.
4) agreeing with role of Local Emergency Hospitals/Minor Injury Units during a MCI.

Trauma Units (TUs) will ensure they fully meet the Pan London/Local Network criteria.

Trauma Units will ensure they have the infrastructure and staff skill set/mix 24/7 to deal with:

The immediate care of very seriously injured patients who may arrive but who would normally go directly to a Major Trauma Centre (MTC).

Less severely injured trauma patients, including the walking wounded.

Ensure all appropriate surgeons have completed a recognised Damage Control Surgery course and all other training set out in the TU criteria is met. This will enable the TUs to deliver DCS to a larger cohort of patients so removing the need for transfer. Damage Control Principles are in appendix 2.

Ensure an up to date contact list is available, setting out who to liaise with during the incident itself on a clinical, EPRR, and executive/management level during the incident itself, transition back to business as normal, for repatriations, non trauma transfers out and post incident.

Ensure that adequate supplies of compressive dressings, tourniquets and novel haemostatics are available.

Ambulance Services

Develop and exercise a Mass Casualty Plan in accordance with statutory obligations defined in The London Resilience Partnership Mass Casualty Framework Version 3.2 August 2015 p22.

Critical Care Services

Each Trauma Network should review where their critical care capacity is and how it can be accessed. This should include hospitals designated as MTC, TU and also other hospitals that may not have an ED or may be in the independent sector that could provide support in case of overwhelming need.

Each critical care unit to review their Trust Major Incident Plan.

There should be an expectation that each MTC should be able to free up 10 level 3 beds within 2 hours of the incident.

Each MTC should have plans to provide a further sustained increase in level 3 capacity for another 10 patients within 12 hours of the incident.

There should be an expectation that each TU should be able to free up 5 level 3 beds within 2 hours of the incident.

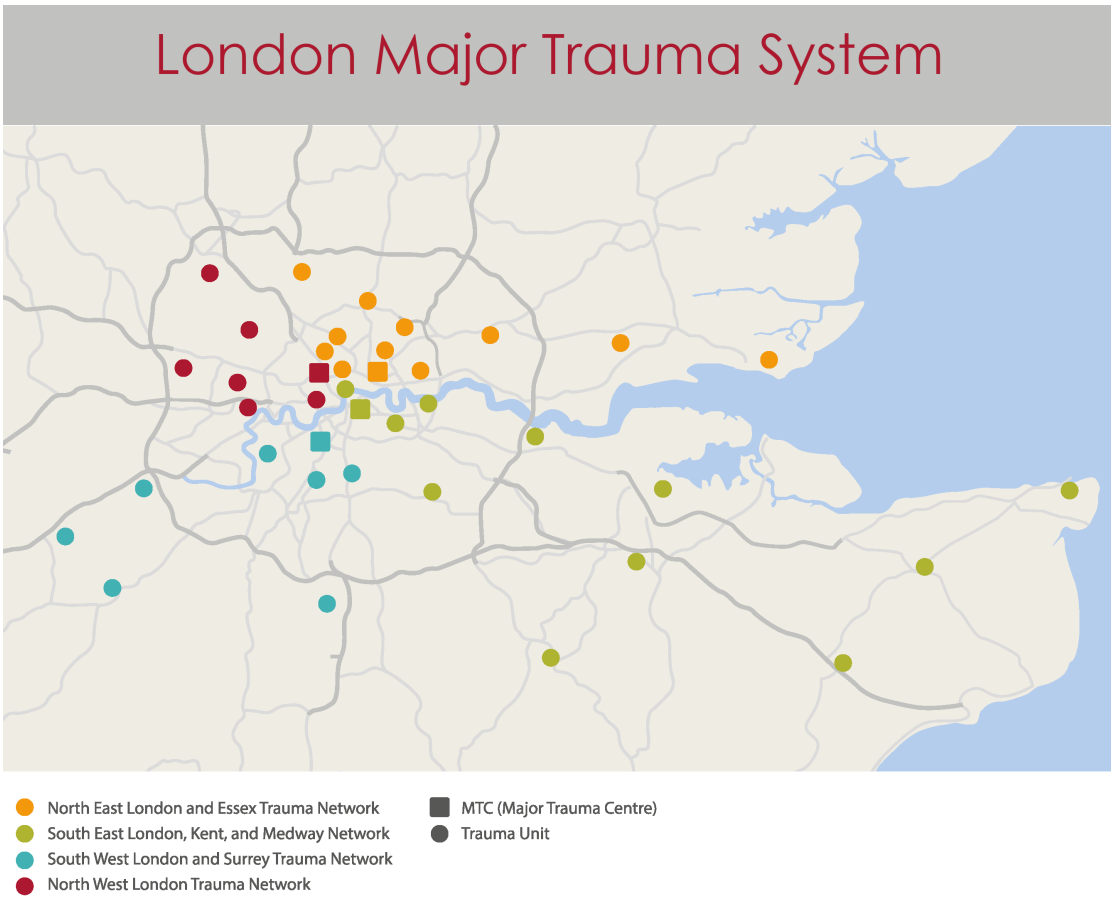
Local plans would dictate how additional level 3 capacity can be freed up.

Local plans should be in place to open up escalation areas for level 2 patients in order to free up the required level 3 capacities.

Each critical care unit should regularly review the resources required to open up the required capacity in the event of such an incident. This should include the provision of trained staff, equipment and drugs.

Appendices

Appendix 1: The London Major Trauma System



The North West London Trauma Network contains the following hospitals:
St Mary's Hospital Major Trauma Centre
Hillingdon Hospital
Chelsea and Westminster
Ealing Hospital
Northwick Park Hospital
Watford General Hospital
West Middlesex University Hospital

The North East London and Essex Trauma Network encompasses the following hospitals:
The Royal London Hospital Major Trauma Centre
Newham University Hospital
Whipps Cross Hospital
Queens Hospital
Basildon Hospital
Homerton University Hospital
North Middlesex Hospital
Southend Hospital
The Royal Free Hospital
Barnet Hospital
University College Hospital
The Whittington Hospital

The South West London and Surrey Trauma Network contains the following hospitals:
St George's Hospital Major Trauma Centre
St Peter's Hospital Chertsey
Croydon University Hospital
St Helier Hospital
Kingston Hospital
Royal Surrey County Hospital
Frimley Park Hospital
East Surrey Hospital

The South East London, Kent and Medway Trauma Network contains the following hospitals:
Kings College Hospital Major Trauma Centre
St Thomas' Hospital
Darent Valley Hospital
William Harvey Hospital
Queen Elizabeth Queen Mother Hospital
Maidstone Hospital
Kent and Canterbury Hospital
Tunbridge Wells Hospital
Medway Maritime Hospital
Princess Royal University Hospital Orpington
University Hospital Lewisham
Queen Elizabeth Hospital London

Appendix 2: Damage Control Resuscitation / Surgery

All hospital Major Incident plans should allow for the provision of senior surgical/critical care 'floorwalkers' who can liaise for specialist advice and provide Triage.

Principles of Damage Control Resuscitation / Surgery

- External Haemorrhage Control – Elastic dressings, Tourniquets, Topical haemostatics eg Celox
- Haemostatic Resuscitation
    - Manage coagulopathy proactively
    - PRBC:FFP in a 1:1 ratio
- Early use of Operating theatre – DCS. See below, reproduced courtesy of East of England.

Tip 1:
Simple basic surgical techniques work
(and don't change)

Tip 2:
Team Work
- ED
- Allow EM to lead on individual casualties and help establish priorities amongst multiple casualties
- Work as teams of surgeons
- Gen / Ortho / Plastic mix
- Communication with anaesthetist vital

Tip 3:
Be decisive, show leadership
- Also show followership
- Egos need to be put away

Tip 4:
Don't be afraid to cross boundaries and get outside your comfort zone
Stabilise, get out, an expert can do the definitive procedure later

Tip 5:
Principles of Damage Control Surgery
- 60 mins start to finish
- ITU
- Return to theatre
- Physiology may allow extension but not anatomy

Tip 6:
Let anaesthetist run the fluid resuscitation intra-operatively
- But make sure they and you communicate about it
- Repeat ABGs etc
- "Ooze"

In young fit patients flow is more important than pressure – avoid vasopressors

Tip 7:
Fix a time to take the trauma patient back and stick to it

Tip 8:
Recognise futility
- Especially in a multi-casualty situation

Summary
• Basic surgery works • Team work • Communication

Appendix 3: Special Circumstances.

CBRN.
This requires special measures and is considered separately in other work. The principle of decontamination is crucial in CBRN incidents.

Burns
There is a National Burns Plan which should be read in conjunction with this document. Below is a guide to burn care for the non-specialist. This is taken from 'Clinical Guidelines for use in Major Incident' c/o East of England.

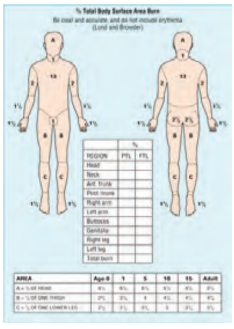
Airway

- Maintain patent airway with C-spine protection
- Early intubation if anticipated or actual airway problems
  - Airway burn
- Presence of facial or circumferential neck burn.
- Burn sustained indoors, Carbonaceous debris in mouth or nose
  - Inhalational injury
- Carbonaceous sputum, burn sustained indoors or increased carboxyhaemoglobin (COHb)
  - Reduced or falling level of consciousness
- Consider cuffed ETT - Leave uncut to accommodate facial & airway swelling

Disability

- Assess and document GCS and pupil size
- Decreased level of consciousness can be multifactorial – consider hypoxia
- May need CT head to exclude head injury

See next page for chart



Breathing

- Ensure adequate oxygenation and ventilation
- 15 litres O_2 non-rebreathing mask / 100% O_2 if intubated & ventilated
- Respiratory failure can be due to chest trauma, inhalational injury and restrictive chest wall eschar formation (consider chest escharotomy)

Exposure

- Secondary survey: Examine head to toe, front and back.
- Check distal perfusion,
  - Temperature & colour
  - Consider escharotomy for circumferential limb burns
- Use Lund & Browder chart to document percentage and depth of burn (Palm = 1% BSA)
- Dress longitudinal cling film, avoid circumferential dressings
- Actively maintain normothermia
- Early gastric and urinary catheter insertion. Fluid requirement commences from time of burn

Burn Wound Care

- Analgesia – Burns are Painful
- Clean
- De-Roof Blisters – assess underlying wound
- Dress
  - Emergency / Initial Dressing – Clingfilm
  - Definitive – Non Adherent /
  - Consider Silver based dressing
  - Flammazine / Acticoat / Urgotulle SSD / Aquacel Ag

Circulation

- 2x large bore cannulae or intraosseous access in first 5 mins
- Baseline bloods: ABG (lactate, O_2Hb, COHb, MetHb), x-match, glucose, baseline electrolytes, renal function and CK
- Burns resuscitation using Parkland Formula
- Refractory hypotension, consider other causes e.g. trauma

Fluids

- Parkland Formula – Hartmans Solution
- 4ml/weight kg/% TBSA Burn in first 24 hours
  ½ volume in first 8 hours,
  ½ volume next 16 hours
  OR
- ¼ ml / kg/hr for first 8 hours.
- Aim for Urine Output 0.5 – 1 ml/kg/hr
- Urinalysis for myoglobinuria (rhabdomyolysis)
  aim for 2ml/kg/hr UOP.
  Other trauma & on-going bleeding will require additional resuscitation
- Paediatric maintenance requirements not included in calculation

Contact Details

For referral or advice
St Andrew's Burns Centre
Broomfield Hospital
Chelmsford
Essex
01245 516038/37

THINK-ASK

Appendix 4: Triage

In the context of a major incident the term triage is used to decide on the priority of treatment / transport. In a non-major incident context the term is used to define the best destination hospital for a patient.

Both over triage and under triage are associated with increased mortality.

During major incidents the ability to support secondary transfer from TU to MTC will be limited – during mass casualty scenarios it may be impossible.

During a mass casualty incident there is a significant risk of overwhelming the 4 major trauma centres if the trauma triage tool is followed.

Distinguishing between a major incident and mass casualty situation may be difficult if there are multiple incident sites.

The trauma triage tool is too sensitive to use during a mass casualty incident and should be disregarded. The triage sort tool requires additional anatomical triage by a senior clinician in order to prevent potentially avoidable mortality.

Ambulance resources (vehicles and staff) will be scarce in the early phase of a mass casualty event. Patients are likely to arrive at hospital by other means.

High velocity firearm incident and a significant explosion may produce a high number of patients with major limb injuries with the risk of exsanguination and or limb loss due to vascular injury. Transfer to hospital as soon as possible is a priority.

During an incident:

Expert and timely medical advice should be available to the ambulance commanders and a major focus of this advice should be on triage strategy (priority and destination).

Initial triage at scene should continue to be performed using the sieve / sort methodology. Creating P1, P2 and P3 categories. The category of P4 (Expectant) should be considered in a mass casualty scenario but must be suitably authorised by Command.

Subsequent anatomical triage must be undertaken by the most experienced clinicians on scene. Where possible this should be a member of the LAS MERIT, APP or London's Air Ambulance (HEMS) emeritus pools.

This re-triage should define which type of receiving hospital the patient should be taken to e.g. MTC, TU with specific specialty or TU. Children and Young people may be triaged with age specific tools or using the tool shown below.

Trauma units have a major role in treating patients in a mass casualty situation.

Patients that would normally be triaged to a MTC will be triaged to TUs; examples will vary depending on the surgical capabilities of the unit.

Co-location of the Casualty Clearing Centre medical lead with the Loading Officer is part of the London Ambulance Service plan.

Consideration should be given to using ambulances to their maximum effect. Staff should use discretion and use vehicles to transport multiple patients at a time.

Each TU must have defined telephone support from its MTC in the handling of cases during an event.

If information at scene is available to assist in assigning the type of destination hospitals it should be used. However in the absence of this, destinations should be defined by the London Ambulance Service Specialist Operations Centre making it as equitable as possible.

All patients should undergo re-triage at the MTC / TU.

There should be early and clear reporting to command regarding numbers of patients.