Implications for Plastic Surgery
Manchester Arena Experience

Ken Dunn
Burn and Plastic Surgeon
Manchester
Who am I?

• Burn surgeon in Manchester from 1996
• Working on burns organisation from 1997
• Med.Dir. UK Burn Injury Database, launched 2005
• UK clinical lead for Coding and Classification 2013
• GIRFT CL Plastics, Hands and Burns 2018-2020

www.iBIDb.com
Plan for the session – KWD views

• Some NHS truths

• Nature of modern MI events

• Local Plans for B&P

• Lessons from Manchester

• Implications for national plans
Recognising that in the NHS:
compared to EU/100K population

- Fewer ward beds
- Greater occupancy \(\Rightarrow\) Less Capacity
- Fewer ICU beds
- Less spending \(\Rightarrow\) Less Resilience
- Fewer doctors
- Higher workloads
Burn Major Incident Group

• 2004
  – Started work in March 2004
  – Capacity based on the results from the NBBB
  – Initial plan in 2006, revised 2010
  – Not actioned by DH

• 2017
  – Part of a national MI Plan
  – Chaired by Jacky Edwards
NHS England
Emergency Preparedness, Resilience and Response

Concept of Operations for managing Mass Casualties

NHS England
Emergency Preparedness, Resilience and Response

Concept of Operations for the management of Mass Casualties (Burns Annex)
Map of Burn Services and MTCs
Consequences

• Very limited capacity
• Secondary transfers highly likely
• Primary assessment is key
• Command and control complex but essential
• Retention by non-specialists to be the norm
• Pre-emptive education and preparation vital

No plan to cover Plastic Surgery or Orthoplastics
Manchester Arena Attack
22 May 2017
Reflections on the response

Thanks to my colleagues
Greater Manchester Trauma System Network (GMTSN)

- **Major Trauma Centre Collaborative**
  - Central Manchester
    - Manchester Royal Infirmary
    - Manchester Children's Hospital
  - Salford Royal
  - Wythenshawe

- **Trauma Unit**
  - Oldham
  - Stockport
  - Wigan

- **Local Emergency Hospital**
  - Bolton
  - Bury
  - North Manchester General

[Map showing Greater Manchester with various hospital locations highlighted]

3 million population
**EPRR: Greater Manchester Capability Distribution plan**

<table>
<thead>
<tr>
<th>Pre-determined GM P1 capability for the first 2 hours</th>
<th>Salford Royal 20</th>
<th>CMFT 20</th>
<th>UHSM 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-determined GM P2 capability for the first 2 hours</td>
<td>Oldham 15</td>
<td>Stockport 15</td>
<td>Wigan 15</td>
</tr>
<tr>
<td>Pre-determined GM P3 capability for the first 2 hours</td>
<td>Tameside 40</td>
<td>NMGH 30</td>
<td>RUCC 10</td>
</tr>
</tbody>
</table>

| P3 adults | Paeds |

**Capacity = 300**
GM EPRR plan

- 15 P2 paeds
- 40 P3 paeds
- 40 P3
- 40 P3
- 40 P3
- 15 P2
- 20 P1
- 20 P1
- 20 P1
- 15 P2
- 20 P1
An Anticipated Event

- Paris November 13th 2015
- Brussels 22nd March 2016
- Nice July 14 2016
- Berlin December 19th 2016
- London 22nd March 2017

Largely a PS event rather than Burns
NW Mutual B&P Support

Meetings in Sept and November 2016

• Established mutual support agreement
• Started a process of response and communication
• Needs to link with GM and Con Ops

• Preston
• Whiston
• Alder Hey
• (Chester)
• Wythenshawe
• RM Children’s
• Christie
Based on 1996 response
**Consultant Level Information**

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Primary Site</td>
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<tr>
<td>Home postcode</td>
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<tr>
<td>Home landline</td>
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<tr>
<td>Home email</td>
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<td>Mobile</td>
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<tr>
<td>Work email</td>
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<table>
<thead>
<tr>
<th>Burns Trauma</th>
<th>Plastics Trauma</th>
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</thead>
<tbody>
<tr>
<td>Children</td>
<td>Y / N</td>
</tr>
<tr>
<td>Adults</td>
<td>Y / N</td>
</tr>
</tbody>
</table>

**Happy to assess and treat MI cases:**

<table>
<thead>
<tr>
<th>Closest large ED to home (tick):</th>
<th>Manchester Royal Infirmary</th>
<th>Royal Manchester Children</th>
<th>North Manchester General</th>
<th>Salford Royal</th>
<th>Wythenshawe</th>
<th>Trafford General</th>
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<table>
<thead>
<tr>
<th>Hospital sites familiar with (tick):</th>
<th>Primary Contractual Site (tick):</th>
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</tbody>
</table>
Communication
Coordinating your individual team response

• How do you contact each other?
  – Daytime
  – Nightime
  – On call or not on call
• Mobile telephone
  – Muted or not?
  – Problems with blind spots
• Landline
  – Do you have one?
  – Do you need one?
• Pager?
  – Where is it?
  – Is it muted?
• WhatsApp
  – Independent of switchboards
  – Problems with blind spots
  – Secure, but not totally?
We confirm that we are responding to an incident at the Manchester Arena. Please follow @gmpolice for updates at this time.
Low energy blast injuries
Secondary penetrating injuries

19 Dead at Scene
3 Others on arrival in Hospital
North West Ambulance Service (NWAS)

Triage priorities

- **P1** Immediate (Life threatening)  - 21
- **P2** Urgent (Serious)  - 24
- **P3** Delayed (Walking wounded)  - 14
- **P4** Dead (0-2)  - 22

59 in total transported by NWAS
“NWAS delivered the right patients to the right place at the right time”

- Demand well within capacity planning
- Simulation resembled reality
- What if demand had exceeded capacity?
Severe Injuries Seen and where...
Injured Numbers and Plastic Surgeons on site
Incident Timeline

- Time of 1st call: 22:32
- Major Incident Declared: 22:46
- All live casualties cleared from scene: 02:46
- Major Incident stood down: 05:25
Demand for Orthoplastics in the first week

- 25 Plastic theatre lists
- 20 Orthopaedic lists
- Elective lists cancelled for 8 days
- Mean operations
  - 3 per patient (1-6)
- Mean operation time
  - 3 hours (1.2 – 7.8h)
- Longest operation 12.4 hours
- Stepped down too early
Greater Manchester Orthoplastic Service
Wythenshawe Hospital
“The Manchester worker bees!”

Thanks to
Mr Jason Wong
Royal Manchester Children’s Hospital
Paediatric Major Trauma Centre

• Mass casualty events
  – Rare

• Penetrating trauma
  – Unusual

• Blunt trauma
  – Conservative treatment

• Parents and children
  – Want to be co-located

• Paediatric trauma units
  – Even less experience
The prolonged surgical response
Team working

Twice daily theatre meetings
Daily rehabilitation meetings

Input from
Royal Centre for Defence Medicine
Birmingham
Manchester Arena Attack

NHS-E Clinical Debrief
8 June 2017

This document is the result of a confidential clinical meeting. Please do not distribute to organisations outside of the NHS

The Kerslake Report:
An independent review into the preparedness for, and emergency response to, the Manchester Arena attack on 22nd May 2017

27th March 2018
Lessons: re Event

- small enough to be manageable within GM plan
- NW ambulance service triage and placement was excellent
- NW regional response was adequate
- trusts stood down too early
- consumable (ortho kit, micro) concerns significant
- PS theatre extra provision was too short, especially for children
- must immediately cancel ALL elective activity
- must include the immediate re-routing of other trauma
Lessons: re Care

- benefit of using whole body CT is to identify soft tissue defects not clinically suspected
- record-keeping shortfall of surgery done
- need pictures with annotations of the surgery & postop events / plans
- PS being used to document the range of soft tissue defects
- value of involving general medicine and general paediatricians to review trauma cases
- max in the first few days of 2 hours in theatre with 1 hour of knife time
Department/Staff

• need for a Bronze Controller for B&P if the event is larger
• need a ‘benign dictator’ to establish what will happen and who does what
• must be an acceptance that consultants will undertake whatever they are asked to do
• psychological support needs to be on offer from the start
Education Prep

- need to create PDFs of all action cards to be printed and stored in boot of all cars plus credit card size versions for the individual
- hardcopy of the plans should also be stored on all PS active spoke sites.
- an educational site using Moodle(?) should contain the action cards plus key lessons
- should be regarded as (actually useful) mandatory training.
- key staff need to undertake specific media training with departmental approval others should avoid media contact to stop the ‘foot in mouth’ syndrome
NHS Organisational

- significant infrastructure questions in GM persist
- rehabilitation lacking for kids more than adults, particularly in community, but overall poor
- current GM planned response is politically driven and not logical
- the importance of NHS passport
- regional plan(s) for PS need to be created
- creation of a burns-like national PS plan is needed?
- the importance of an overall EPRR MI management system
Questions:

How much is too much?

When can you tell?

And when it is too much do you:

Send the patient
or
Sent the staff
02:30 on a Saturday morning on a Bank Holiday weekend
## Incident/Emergency Report

**Incident Date:** 10/01/2017  
**Incident Time:** 08:17 am  
**Nature of Incident:** Crash/Blast

<table>
<thead>
<tr>
<th>Patient</th>
<th>DOB</th>
<th>Location</th>
<th>Admitted</th>
<th>Injury</th>
<th>Injury Score</th>
<th>Unmet Needs</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOGGS JOE</td>
<td>04/05/1965</td>
<td>Guy’s and St Thomas’ NHS Foundation Trust: Ward 7</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
<td>24</td>
<td>34</td>
<td>No</td>
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<tr>
<td>DOE JOHN</td>
<td>12/03/1948</td>
<td>Guy’s and St Thomas’ NHS Foundation Trust: Wilson Ward</td>
<td>10/01/2017</td>
<td>Bony: Displacement</td>
<td>Spinal</td>
<td>22</td>
<td>13</td>
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<tr>
<td>MAN SUPER</td>
<td>04/05/1954</td>
<td>Great Ormond Street Hospital NHS Foundation Trust: Ward 27</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
<td>19</td>
<td>15</td>
<td>Yes</td>
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<tr>
<td>ANONYMOUS AN</td>
<td>29/07/1974</td>
<td>Barts Health NHS Trust: Joplin Ward</td>
<td>10/01/2017</td>
<td>Bony: Displacement</td>
<td>Vascular</td>
<td>19</td>
<td>8</td>
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<td>BLOGG JOE</td>
<td>04/05/1955</td>
<td>Guy’s and St Thomas’ NHS Foundation Trust: Ward 7</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
<td>14</td>
<td>4</td>
<td>No</td>
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<td>Guy’s and St Thomas’ NHS Foundation Trust: Wilson Ward</td>
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<td>Great Ormond Street Hospital NHS Foundation Trust: Ward 27</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
<td>9</td>
<td>7</td>
<td>No</td>
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<tr>
<td>BACK HUNCH</td>
<td>29/07/1974</td>
<td>Barts Health NHS Trust: Joplin Ward</td>
<td>10/01/2017</td>
<td>Bony: Displacement</td>
<td>Vascular</td>
<td>8</td>
<td>5</td>
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<tr>
<td>DUST FAIR</td>
<td>29/07/1974</td>
<td>Barts Health NHS Trust: Joplin Ward</td>
<td>10/01/2017</td>
<td>Bony: Displacement</td>
<td>Vascular</td>
<td>2</td>
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<td>ANONYMOUS AN</td>
<td>29/07/1974</td>
<td>Barts Health NHS Trust: Joplin Ward</td>
<td>10/01/2017</td>
<td>Bony: Displacement</td>
<td>Vascular</td>
<td>5</td>
<td>2</td>
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<tr>
<td>HOOK CAPTAIN</td>
<td>14/09/1964</td>
<td>Royal Free London NHS Foundation Trust: Ward 9</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
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<td>5</td>
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<tr>
<td>NAME NON</td>
<td>14/09/1964</td>
<td>Royal Free London NHS Foundation Trust: Ward 9</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
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<td>Yes</td>
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<tr>
<td>PAN PETER</td>
<td>14/09/1964</td>
<td>Royal Free London NHS Foundation Trust: Ward 9</td>
<td>10/01/2017</td>
<td>Soft Tissue: Muscle/Tendons</td>
<td>4</td>
<td>0</td>
<td>No</td>
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</tbody>
</table>

**Patients Affected:** 54  
**Patients Managed:** 52

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**Prioritise**

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**NHS England**

**mdsas medical data solutions and services**
Prioritise
Reporting Dashboard

Incident/Emergency Report

Incident Date: 10/01/2017
Incident Time: 08:17 am
Nature of Incident: Crash/Blast

Patients Affected: 54
Patients Managed: 52

<table>
<thead>
<tr>
<th>Patients</th>
<th>Admitted</th>
<th>Treated</th>
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<tbody>
<tr>
<td>49</td>
<td>17</td>
<td>10</td>
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<tr>
<td>61</td>
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<td>10</td>
</tr>
<tr>
<td>736</td>
<td>13</td>
<td>18</td>
</tr>
</tbody>
</table>

Graph showing data distribution.
DoS               All on N3
NBBB

MI Site Commander
Site Images via SiD

MI Record

Activation

Silver

Silver

Silver

Bronze
Bronze
Bronze

Bronze
Bronze
Bronze

Bronze
Bronze
Bronze

Gold

COBRA

Minister DH

All clinical teams comms across all sites via Forward Clinical app
Travel time analysis

Minutes To Nearest Centre
- 120 +
- 90 to 120
- 60 to 90
- 30 to 60
- 0 to 30

Burns Centres By Status
- IN (7)
- OUT (6)
Intercepted Referrals

Referral Submitted
You have successfully entered details of your referral request.
Please contact the Burns Service below:

Referral ID: 14

MDSAS Test Centre (MDSAS Test Centre)
0161 277 7917

The unique QR Code below can be used with the MDSAS Referrals Mobile App to upload wound images to this referral.

Major Incident

⚠️ Important!
A major Incident/Emergency at Manchester City View House was reported today 10/01/2017 at 08:17 am.
Is this patient referral a direct result of the incident above?

You Ref

NHSEPRR

Save Referral Export

OK
Referral made between systems

NHS networked computer
Access via a web browser (Chrome or Internet Explorer 8.0+)

http://referrals.mdsas.nhs.uk/
Injury Details

NHS BURNS

Burns Referral System

Date & Time of Injury:
- Date: [ ]
- Time: [ ]
24hrs

Arrived in A&E:
- Date: [ ]
- Time: [ ]
24hrs

Describe Injury:

Type of Injury:
- Select:

Locality:
- Select:

Living space:
- Select:

Activity:
- Select:

Category:
- Select:

What percentage is superficial or superficial dermal burn?
- [ ] 0 % TBSA

What percentage is deep dermal or full thickness burn?
- [ ] 0 % TBSA

Calculated total 0 % TBSA (SDD TBSA + DDFT TBSA)

Does the patient have an airway injury?
- [ ] Yes
- [ ] No

Does the patient require Fluid Resuscitation?
- [ ] Yes
- [ ] No

OFFICIAL FIRST AID GUIDANCE: COOL BURN WITH 20MINS OF COOL RUNNING WATER PLEASE PROVIDE FIRST AID TO PATIENT IF NOT YET PERFORMED

Medication:
(Treatment so far)

Other comments / past medical history / comorbidities:

You can upload photos from your computer’s hard drive here, alternatively you can send photos using the MDSAS referrals mobile phone app and the unique QR code appearing after you click submit.
(The patient’s photo consent form, Lund/Browder and other forms can also be photographed and included)

Choose Files
No file chosen

Upload
Secure NHS N3 web database platform accepting various datasets
Viewing the referral

Images

There are 2 images uploaded to this referral record.

Show QR-Code
Options / Alternatives

- **999 eye**
  - Info and images from scene

- **SiD**

- **MDSAS**
  - **EPRR**

- **Norse**
  - **MI**

- **Forward app**
  - Team communication / coordination over all sites
With thanks to our colleagues at The Christie Hospital, Liverpool and Leeds for their help plus the many offers of help from all over the British Isles.