Lessons from LIVEX for Transfusion Services in Responding to Mass Casualty Incidents

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National Guidance

Concept of Operations for managing Mass Casualties

- Predetermine number of patients each hospital can take during initial distribution from scene
- Double ICU capacity for 96 hours
- Run a trauma MDT
- Trauma Units to treat patients normally transferred to a Major Trauma Centre
Test the Trust Incident Response Plan

Includes all action cards at Gold, Silver and Bronze levels
AMSTC is to deliver individual and collective training to 2nd Medical Brigade personnel and its deployable attached force elements in order to maximise operational hospital capability in support of enduring operations…
How LIVEX worked

Physical Set-Up
- Casualties IN
- Walk-Ins
- Ambulance
- Nurses Station
- Resus
- Treatment Bays
- CT Scanners
- Transfusion

Virtual Set-Up
- Gold Command
- Silver Command
- Bronze Command Room
- Actor leaves ED & becomes a card

#LIVEX18
How LIVEX Worked

Physical Set-Up

The ED & Transfusion

Virtual Set-Up

Command Rooms
LIVEX – In Situ Simulation

• Hoped that staff could immerse themselves in the live exercise.
• Realistic as possible
• ED started as usual day with ‘typical’ ED patients including patients admitted with cardiac events, anaphylaxis, RTA’s etc.
• Need to be able to cope with usual activity as well as major incident activity.
• Support systems set up to keep it realistic, including booking in patients to ED, CPD system, radiology department.
• Mix of P1, P2 and P3 casualties.

• Live casualties and high fidelity manikins, including paediatric manikins and those which could undergo thoracotomy.

• Most of the P1 and P2 casualties had a subject matter expert present.
Transfusion Action Card

- Transfusion Action Card Info – what was the plan we were testing?

**Team leader in Transfusion**

**On declaration of major incident:**
- Check stock levels: Ring NHSBT to place an order particularly for platelets (if required).
- Issue emergency O neg/O pos and label ready for transfer down to issue fridge.
- Start to defrost AB FFP and AB Octaplas; when ready label and transfer to issue fridge with red cells.

**During major incident:**
- See grab sheet 4.
- Sample processing: once ABO group known see if massive blood loss protocol requires activation for each Major person.
- Liaise with THESCOM (theatre surgical commander).
- Liaise with ESCOM (emergency department surgical commander).

**At end of Incident:**
- Ensure log is completed.
- Stand down team.
- Match up all samples and results, enter transfused units onto system and reconcile stock.
- Complete after action review for debrief.

**Issue Fridge Lead TP/BMS/ATP**

**On declaration of major incident:**
- Attend Transfusion Lab to obtain and transport stocks down to issue fridge in theatre reception.
- Issue O neg to females 4 months to 50 years of age.
- Issue O Pos to all other patients.
- Record Majax number of patient and component number for stock reconciliation.
- Issue FFP to all patients over the age of 30.
- Issue SDFFP (Octaplas) to all patients under the age of 30.
- (? Have supply of Anti D at issue fridge)

**During major incident:**
- Ask clinical staff to attach a photocopy of the wristband to a plastic bag and put all used blood bags into the bag.
- Please liaise with Lab via theatre fridge phone regarding stock movement, grouping of patients, activation of further blood loss packs.
- Ensure subsequent transfusions recorded, blood stocks available for ongoing surgery.
- Think about cell salvage if suitable.

**Major Incident Response Procedure**

**Scarborough Hospital**

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<tr>
<th>Document Author</th>
<th>Jackie Dey</th>
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<tr>
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<td>Gemma Maxwell</td>
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<tr>
<td>Approved By</td>
<td>Jenny Fullthorpe</td>
</tr>
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<td>Review Interval</td>
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#LIVEX18
Distances

SCARBOROUGH – LEEDS
47 miles
1.75 hours

SCARBOROUGH – SOUTH TEEES
47 miles
1.5 hours

YORK – LEEDS
30 miles
1 hour

SCARBOROUGH – YORK
41 miles
1 hour

SCARBOROUGH – HULL
45 miles
1.25 hours

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Transfusion Statistics from LIVEX

Optimal Red Cell stock levels
YH

Optimal Plasma stock levels YH

Optimal Red Cell stock levels SGH

Optimal Plasma stock levels SGH
Transfusion Statistics from LIVEX

Activation of massive blood loss v Time line For YH and SGH

#LIVEX18
York Incident happened at 09.43
Transfusion Lab informed at 10.00.

10.05 1st Order to NHSBT
20 units A+ RBC
40 units O+ RBC
10 units O - RBC
10 units A - RBC
4 units A+ platelets
20 units AB FFP

Arrived hypothetically at 11.15.

12.55 2nd Order
20 units AB FFP
10 units O- RBC
10 units O +RBC
10 units A+ RBC

Arrived hypothetically at 14.00

16.00 3rd Order (as incident called to an end)
4 units A+ platelets and renewal of cryo levels
SGH Incident happened at 09.50:
Transfusion Lab informed at 10.12.

10.19 1st Order to NHSBT
- 25 units A+ RBC
- 25 units O+ RBC
- 10 units O - RBC
- 10 units A - RBC
- 4 units A+ platelets

Arrived hypothetically at 12.01.

10.30 Call to request internal transport to bring stock from Bridlington hospital
- 6 O - RBC
- 6 A+ RBC.

12.30 2nd Order to NHSBT
- 30 units AB FFP.
Arrived hypothetically at 14.00

13.40 3rd Order to NHSBT
- 30 units O+
Target delivery time 15.40

14.10 4th Order
- 4 units A+ platelets and renewing cryo stock
Transfusion Statistics from LIVEX

**Normal Red Cell Stock levels v LIVEX usage For York Site**

- **Number of red cell units**
- **Red Cell Groups:** O+, A+, B+, AB+, O-, A-, B-, AB-

**Plasma component stock levels V LIVEX Usage at York Hospital**

- **Number of units**
- **Plasma Component:** AB FFP, O FFP, A FFP, B FFP, AB Octaplas, B Octaplas
Transfusion Statistics from LIVEX

**Normal Red Cell Stock levels v LIVEX usage For Scarborough Site**

**Plasma Component Stock levels v LIVEX usage For Scarborough Site**
Transfusion Lessons Learnt

- What were the top lessons for transfusion from LIVEX?

- No consistent patient ID numbering system across the organisation for use in Major Incident

- Needed to update SOP to reflect use of O positive in females over 50 (and males)

- Decided to adjust FFP SOP to match national guidelines as previously had a local agreement in place

- To defrost AB Octaplas as 1st line option and ensure there is a specific job sheet available for junior members of staff
### Feedback - Participants

#### Collated York Hospital LIVEX Participant Feedback

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