Casualty Flow Through the Deployed Medical Evacuation Chain

Michael Williams
Dstl Farnborough, Cody Technology Park, Ively Road, Farnborough, Hampshire GU14 0LX

1. The land-based medical evacuation chain consists of a series of facilities which are designated a ‘Role’ number to describe their functional capability to deliver specific levels of care. Casualties passing between Roles of care should receive continuous, relevant and progressive care. The deployed medical chain typically comprises of 3 Roles:

- **Role 1:** Field hospital (F2 Field)
  - Typical personnel include:
    - 22 Doctors / Medical Officers
    - 8 Surgeons
    - 213 Nurses (General, Burns, ITU)
    - 11 Anaes and Resus Teams
    - 67 Dental Officers / Technicians
  - Functions include:
    - Medical Evacuation from Role 2 to Role 3
    - Casualty Triage
    - Essential capability to an NHS hospital
    - Major surgery
    - Radiotherapy
    - Intensive care units
    - Wards with between 50-200 beds

- **Role 2:** Regimental / Unit Aid Post (RAP / UAP)
  - Typical personnel include:
    - 1 Doctor
    - 6 Medical Officers
  - Functions include:
    - Medical evacuation from point of wounding to Role 1
    - Casualty Triage
    - Treating minor casualties for immediate return to duty
    - Reutilisation and stabilisation

- **Role 3:** Forward Surgical Station (FSS)
  - Typical personnel include:
    - 15 Doctors / Medical Officers
    - 4 Surgeons
    - 76 Nurses
    - 2 Anaes and Resus Teams
    - 67 Dental Officers / Technicians
  - Functions include:
    - Medical evacuation from Role 1 to Role 2
    - Casualty Triage
    - Carry out medical treatment (Role 2) and damage control surgery (Role 2+3)
    - Moving facility up to 25 beds

2. The afloat medical chain is similar to the land-based medical chain except the medical facilities are designated an ‘Echelon’ number to describe their functional capability to deliver specific levels of care.

3. When assessing large-scale scenarios, a medical model called MEDEVAC is used. MEDEVAC is a medical assessment model designed to model the flow of casualties through the medical evacuation chain from Role 1 to Role 3. The model uses data from the ability of scenario-specific medical ORBATs to cope with the anticipated flow of casualties. The input data is loaded into the model and tracks individual casualties as they progress through the three stages of the system – transfer, treatment, and recovery.

4. **Inputs**
   - The percentage split of battle casualties into the prioritisation categories (P1, P2, P3 and RNZB Shock)
   - The percentage of battle casualties into the prioritisation categories (P1, P2, P3 and P3 Shock)
   - Relative distances between medical facilities

5. **Outputs**
   - No. of Role 3 facilities
   - No. of ward beds at each Role 3 facility
   - No. of surgical teams at each Role 2+ facility
   - No. of on-board aeromed teams at each Role 2+ facility
   - No. of ambulances at each Role 2 facility for casualty evacuation
   - Arrival times of each CASEVAC asset
   - CASEVAC capability (speed, capacity)
   - Treatment times
   - Recovery durations

6. **Results**
   - There are five main measures of effectiveness that are reported:
     - No. of surgical teams
     - No. of CASEVAC assets (armed and unarmed)
     - No. of on-board aeromed teams
     - No. of aeromed assets (fixed wing aircraft)

7. **Surgical Teams**
   - Surgical Teams
   - The duration of surgery for the three priority categories are:
     - 120 mins for a P1 casualty
     - 60 mins for a P2 casualty
     - 30 mins for a P3 casualty

8. **Analysis**
   - To support equipment planning, we carry out an analysis for particular scenarios of interest and test whether the deployed medical Order of Battle (ORBAT) is sufficient to support the anticipated flow of casualties, both battle and DNBI.

9. **Large-scale (LS) / Medium-scale (MS) / Small-scale (SS) Scenarios**
   - The following represents the stages involved when testing a medical ORBAT for a particular scenario:
   - Combat modelling determines the attrition to platforms for all coalition nations.
   - Using historical data to determine the number of personnel casualties attributed to UK units. Casualties broken down into wounded in action (WIA), killed in action (KIA), captured/missing in action (CMIA) and Battle Stress (BS).
   - Using a post processor to the combat modelling, a casualty stream is generated by location and time.
   - The casualties are then prioritised in P1, P2 and P3, using assumptions based on historical evidence.
   - Using military advice, a medical footprint is laid down to position all medical facilities based on the locations of the casualties.

10. **Graphs and Figures**
   - Figure 1: A simple representation of the land-based chain
   - Figure 2: Casualty stream example
   - Figure 3: Surgery Teams utilisation for the allocation of surgical teams at a Land-Based Hospital. The duration of surgery for the three priority categories are:
     - 120 mins for a P1 casualty
     - 60 mins for a P2 casualty
     - 30 mins for a P3 casualty
   - Figure 4: An example of the bed occupancy and evacuation profile of casualties at a 55-bed Role 3 facility
   - Figure 5: A graph showing the build-up of casualties operating for surgery

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**Note:** The document contains technical and specialized content related to medical evacuations and planning, including references to specific medical facilities, models, and scenarios. The information is intended for an audience with knowledge in military and medical logistics.