

**Focus On....Managing Health Services Support to Military Operations.**

**Medical Planning and the Estimate**

**Authors:** MCM Bricknell DM MA MMedSci MBA FFPH FIHM MFOM MRCP (1), RHB Williamson MB ChB MSc MRCP MFOM (2)

**Affiliations:** (1) Medical Director, Headquarters Region Command (South), Operation HERRICK, BFPO 772 (2) Commander Medical, Headquarters Joint Force Support Afghanistan, Operation HERRICK, BFPO 792

**Corresponding Author:** Colonel Martin CM Bricknell L/RAMC, Medical Director, Headquarters Region Command (South), Operation HERRICK, BFPO 772

Email: [martin@bricknell.net](mailto:martin@bricknell.net)

**Abstract**

This is the second of a series of monographs that describe some of the principles and factors involved in managing health services support to military operations. The first paper considered the role of health services support in the wider context of military operations. This paper examines the principles of medical planning with consideration of the formal planning tool 'the Estimate' The paper shows how military medical planning must be tightly linked to wider general staff planning processes and how staff analyses lead to a formal medical plan. The next paper will consider the detail of Casualty Estimation.

Word Count: 98

## **Introduction**

This is the second in a series of monographs that examine some of the principles and factors involved in managing health services support to military operations. The first paper set the operational context for military medical support. This paper will discuss the principles of medical planning with specific consideration of the formal planning tool called the 'Estimate'. The next paper will consider Casualty Estimation and the link between historical evidence and prospective forecasting of demand for medical resources. The paper is based upon the UK military staff planning process (1, 2) but will also consider NATO staff planning processes (3).

## **The Theory Of Military Operational Planning**

The first paper introduced the functional staff branches within a military headquarters. It described the role of the J5 Plans, J35 Refine, and J3 Operations branches that deliver the core staff process of Plan-Refine-Execute. Medical planning has a function within the planning cycle from strategic to tactical level, and across the military staff branches. Military operational planning is based upon the 'estimate'. There are two discrete outputs from the medical contribution to this process. The first output develops the health promotion and preventive medicine advice and actions required to assist in the maintenance of the physical, psychological and social health of the force. The second output develops the plan to provide missions and tasks for the medical elements of the force.

The medical planning cycle draws information from, and contributes to, almost all aspects of the operational estimate. For this reason the term ‘medical estimate’ is not accurate; what is discussed is the medical contribution to the estimate process. The medical contribution utilises standard staff tools and conforms to the standard staff format to ensure coherence between the operational, logistic and medical functions. There are a number of different military formats including the NATO Operational Planning Process, the UK Joint Operational Estimate and the UK Army ‘7 Questions’. This paper proposes a format for medical staff in a headquarters or within a medical unit based on the following 5 steps:

- a. ***Step 1*** – Mission Analysis.
- b. ***Step 2*** – Evaluation of Factors.
- c. ***Step 3*** – Consideration of Courses of Action (COA).
- d. ***Step 4*** – Commander’s Decision.
- e. ***Step 5*** – Development of Plan.

This generic structure is used for formal estimates from the Grand Strategic to the Tactical level in the military chain of command. Specific tools, unique to the medical function (such as Casualty Estimation and Health Risk Management), are introduced within Step 2 – Evaluation of Factors. The factors themselves fit a generic structure but the level in the chain of command at which the estimate is conducted will determine the breadth and depth of the consideration. This will be different for the OC of a Close Support Medical Squadron compared to the medical staff of a Joint Force

Logistic Component Headquarters. Medical units or medical staff may develop specific checklists for use under each factor to support medical planning at their level.

At each stage the '3 column format' is used. This is designed to allow the identification of a factor, the generation of a list of deductions that arise from considering that factor and finally the generation of tasks that arise from the factor.

The factor or deduction should be discarded if the consideration does not result in a task or constraint. An example is given below:

Factor	Deduction	Task
Ground: Routes: Main Supply Route is 300km.	Max speed of Blue light ambulances travel on MSR is 50 kih. Amb response nodes are needed every 75 km if 1 hour rule to BATLS is to be met (allowing for Notice to Move).	Put Amb response nodes at start, 75km, 150km, 225km and end of MSR.

***Step 1 – Mission Analysis.***

Before starting the formal estimate process it is important to obtain as much background material as possible. This may include maps, orders from higher formations, intelligence summaries, a Medical Intelligence Assessment, a Medical Warning Notice and even information downloaded from the internet (eg. World Health Organisation, UK DoH, CIA Factbook etc). Ideally the estimate process begins with mission analysis based on the mission statement provided by the higher headquarters. This mission statement should be a unifying task with a purpose. However it may be difficult to write concise mission statements for the medical

elements of the force and so a series of tasks may be used. As a general guide, the mission statement should include some guidance on: where; when and for how long; at what distance and over what type of ground; what type of operation and the size of the force or population to be supported. In many circumstances the medical commander will not be given a mission statement and so it may be necessary to start by deriving a medical mission statement from the operational commander's mission statement.

The purpose of mission analysis is to establish what effect a commander has to achieve in his superior's concept of operations. This requires an understanding of the superior's End-State and Main Effort. A commander is required to understand his superiors' Intent at two levels above in order to place his own actions into full context. A Warning Order should be issued at this stage.

## ***Step 2 - THE EVALUATION OF FACTORS***

***Generic Structure.*** The Evaluation of Factors stage of the Estimate is designed as a series of tools and checklists to ensure that all aspects of the problem are considered. The following are mandatory: Enemy, Environment (including ground and weather), Friendly Forces (including Combat Service Support), Surprise and Security, and Time. In addition the following medical factors (which generate specific staff actions) may be used: Casualty Estimate, Medical Force Protection, Medical Capabilities, Medical Logistics, Medical CBRN and Medical C4. The generic structure is designed to enable the Estimate to be performed by a single individual or divided amongst several officers working within a medical staff or a unit headquarters.

## **GROUND [Distance, Destination]**

This factor considers the climate, topography, infrastructure and distance where forces are to be located. The use of graphical techniques (map marking etc) allows multiple sources of data to be integrated into a single source of information for medical planning. Distances between map features should be converted into time to facilitate the link between the clinical timelines and potential locations of units.

## **ENEMY FORCES [Threat Evaluation]**

***Threat Identification.*** Threat evaluation is the process that links the enemy's military capability to an assessment of the types of casualties that might be expected. The medical staff should discuss with J2 - Intelligence staff the types of weapon systems that might be utilised by the enemy in order to generate a list of the range of injuries that might require treatment as a result of military operations. These may be the result of direct violence such as small arms, indirect fire, airborne delivery systems.

Weapons systems may cause indirect violence from mines, improvised explosive devices etc. The effects of emerging weapon systems such as enhanced blast weapons (eg. Fuel Air Explosives) and directed energy weapons (DEW, lasers etc) should also be considered. The NBC threat should be identified at this stage but detailed consideration of this factor may be deferred for review under Medical CBRN. The disease threats should be included within the Threat Identification list to provide a comprehensive start point for the Health Threat Integration conducted within the Medical Force Protection factor.

***Threat Evaluation.*** Threat evaluation links Threat Identification with the enemy's doctrine for the tactics likely to be used against friendly forces. Intelligence staff may

produce a graphical overlay that will allow assessment of the locations where casualties might be generated.

### **FRIENDLY FORCES [Population at Risk]**

***Population at Risk (PAR).*** A formal assessment of the PAR is required to determine the dependency of the military health system. This should be appropriate to the level at which the estimate is being conducted and may include the following forces: UK Forces (Force Troops, Contractors on Deployed Operations (CONDO), UK civilians, and Land, Maritime, Air, Logistic and Special Forces Components), Allied Forces, Prisoners of War (PW), Non-Government Organisations (NGO), Local civilian population and Displaced Persons (DPs).

***The Commander's Operational Plan.*** The medical plan must be aligned to the operational plan. The operational overlay, usually produced as part of the Commander's plan, will show the distribution of the PAR on the ground. Specific phases of war may generate specific medical planning considerations e.g. the medical plan for an obstacle crossing should have medical facilities on both sides of the obstacle.

### **SURPRISE AND SECURITY**

The location and marking of medical units are important factors to be considered with Surprise and Security. Commanders may wish to constrain the medical plan to ensure that the tactical signatures of medical units (size, Red Cross etc) do not provide operationally sensitive intelligence to enemy forces. Conversely the overt display of medical units may be used to reinforce the military potential by demonstrating the preparations for the treatment of military casualties.



## **TIME**

The impact of time on medical support is considered elsewhere within this paper.

Important timings that will affect the medical plan should be extracted from the intelligence picture and the products of the operations staff branches (or orders). The framework for a medical synchronisation matrix may be created from this information.

## **CASUALTY ESTIMATE [Demand, Capacity]**

The Casualty Estimate links the Threat Evaluation with the Population At Risk to produce an estimate of the numbers and types of casualties that will require treatment and evacuation. Intelligence, Operational Analysis and Medical Staff work together with J5 and J35 staff to produce the figures for Battle Casualties. Medical Staff produce the figures for Disease and Non-Battle Injury (DNBI). These figures combine to produce a daily attendance rate (Demand). The breakdown of these figures by distribution of injury, type of illness and severity enable an assessment of resource utilisation (Capacity). At the Operational level, these calculations will lead to rates for admissions to Role 3, hours of surgery, bed occupancy, strategic Aeromedical evacuation and the Theatre holding policy. At the Tactical level, calculations will lead to the throughput of medical units and evacuation requirements.

## **FORCE HEALTH PROTECTION**

Force Health Protection describes the medical contribution to Force Protection and the Management of Risk. It uses the Health Risk Management process described in a previous paper to identify actions that need to occur to reduce the risks to the health of the force as far as is reasonably practical commensurate with the Commander's plan

(4). The Casualty Estimate has already linked the Threat Assessment with the Population At Risk. Risk Assessment matches the severity of the outcome with the risk (Casualty Estimate) in order to prioritise the Medical Force Protection tasks. Risk Management joins control measures, medical countermeasures, information, instruction and training, treatment and hazard monitoring into an integrated package. Finally audit and surveillance is used to assess the effectiveness of the Risk Management process.

### **MEDICAL CAPABILITIES**

The product of the evaluation of the preceding factors is a list of the medical capabilities required to meet the medical commander's mission.

### **MEDICAL LOGISTICS**

Medical Logistics merits a separate heading due the technical complexity of the subject. In addition to medical equipment modules, it is necessary to undertake detailed planning for supply of individual line items, oxygen, blood and blood products (eg. Fresh Frozen Plasma) and clinical waste. Special attention needs to be paid to the storage and distribution chain to ensure that medical material is kept within specified temperatures.

### **MEDICAL CBRN**

The threat may determine that the medical contribution to the NBCD plan becomes a significant planning factor. This subject will not be considered in any further detail here.

### **MEDICAL C4**

The efficiency of the health services system is dependent on the effectiveness of the C4 (Command and Control, Communications and Computers) of the various medical elements in a Theatre of Operations. The treatment and movement of a single casualty may involve co-ordination across a number of headquarters and command boundaries. The interface between medical and personnel information systems should also be considered within this factor. There will be a need for extensive liaison if the medical plan has provision for the use of Allied or Host Nation Medical facilities.

### **ASSESSMENT OF TASKS**

The Assessment of Tasks is a key product of Step 2. The capabilities column would have already been generated as a result of work under the Medical Capabilities factor. Tasks listed in column 3 of the Estimate can be transcribed onto this table to provide a summary of all the medical tasks that need to occur as a result of the Evaluation of Factors.

### ***STEP 3 – CONSIDERATION OF COURSES OF ACTION***

This is often the most difficult but most important part of the estimate process. The medical tasks generated in the Assessment of Tasks need to be converted into a series of Mission Statements or Task Lists for the medical elements of the Force. Ideally the estimate process will lead to a number of key decisions, some of which may have a series of options. These should be examined under Consideration of Courses of Action. It is important to remain focussed on the level in the Chain of Command at which the Estimate is being undertaken. It is likely to be wrong for the medical staff of a Land Component Headquarters to site Regimental Aid Posts but it may need to direct the number of Role 2 (Light Manoeuvre or Enhanced) units being deployed to

the Theatre. A Joint Headquarters should certainly consider options for Role 3 medical support such as use of UK facilities, Allied facilities or Host Nation facilities.

#### ***STEP 4 – COMMANDER'S DECISION***

The Estimate must result in one or more decisions by or on behalf of the Commander. This should confirm a specific Course of Action that can be developed into a formal plan. A full Warning Order should be issued at this stage.

#### ***STEP 5 – DEVELOPMENT OF THE PLAN***

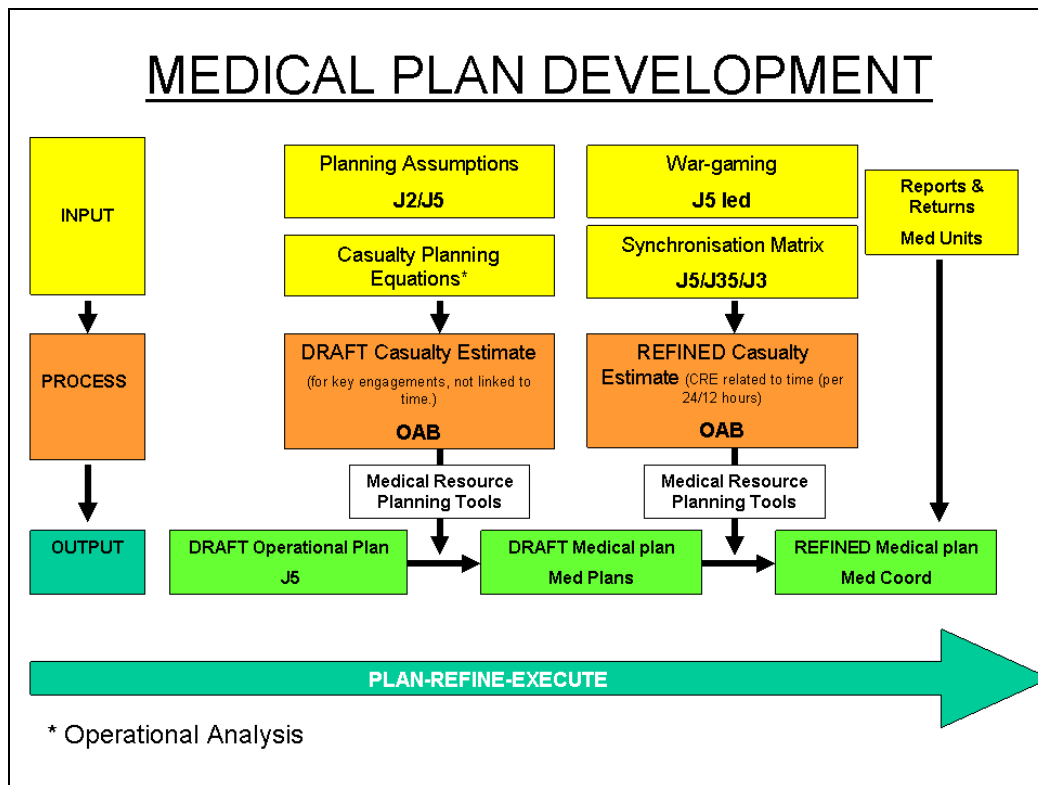
***Planning Tools.*** Medical units and medical staff may use General Staff planning tools to assist with the development of the medical plan. The time sequencing of the medical plan may be displayed in a synchronisation matrix derived from the Commander's operational plan derived under Friendly Forces factor, the framework created under the Time factor and the information contained in the Assessment of Tasks. This should be linked to the Force Element Table (FET) to ensure that the medical plan develops incrementally with the increase in the PAR for the initial deployment to a Theatre of Operations. Medical staff and units should be closely involved in any Wargaming undertaken by the Operations staff.

#### **The Reality Of Military Operational Planning**

Whilst the previous section described military operational planning as a single linear process, the reality is that it is usually an iterative process involving a number of cycles of planning activity. These cycles both increase the understanding of the problem and also the precision of the plan to resolve it.

The relationship of the medical function to these cycles is summarised in Figure 1. The medical planning team review the outline threat assessment and operational plan provided by the J2 intelligence and J5 planning staff. This is informed by Casualty Planning equations and ratios provided by Operational Analysis staff to provide a draft Casualty Estimate for the operation. The Casualty Estimate provides data for a Medical Resource Planning tool to determine the medical organisation required to support the operation and forms the basis of a draft Medical Support plan. This is likely to be communicated as an Annex to the main Operational Order. The next phase of operational planning is likely to include J5 led war-gaming which will confirm the operational design and lead to a synchronisation matrix of operational activities. This allows the Casualty Estimate to be converted from an activity base (i.e. for key engagements) to a time base (i.e. to determine the casualty flow over time). The medical resource analysis is similarly refined into to allow decisions to be made over the location of medical units and the time sequence of medical evacuation requirements. This leads to the production of the definitive medical plan which would be contained in the medical annex of Fragmentary Orders (FragOs) for each phase of the operation.

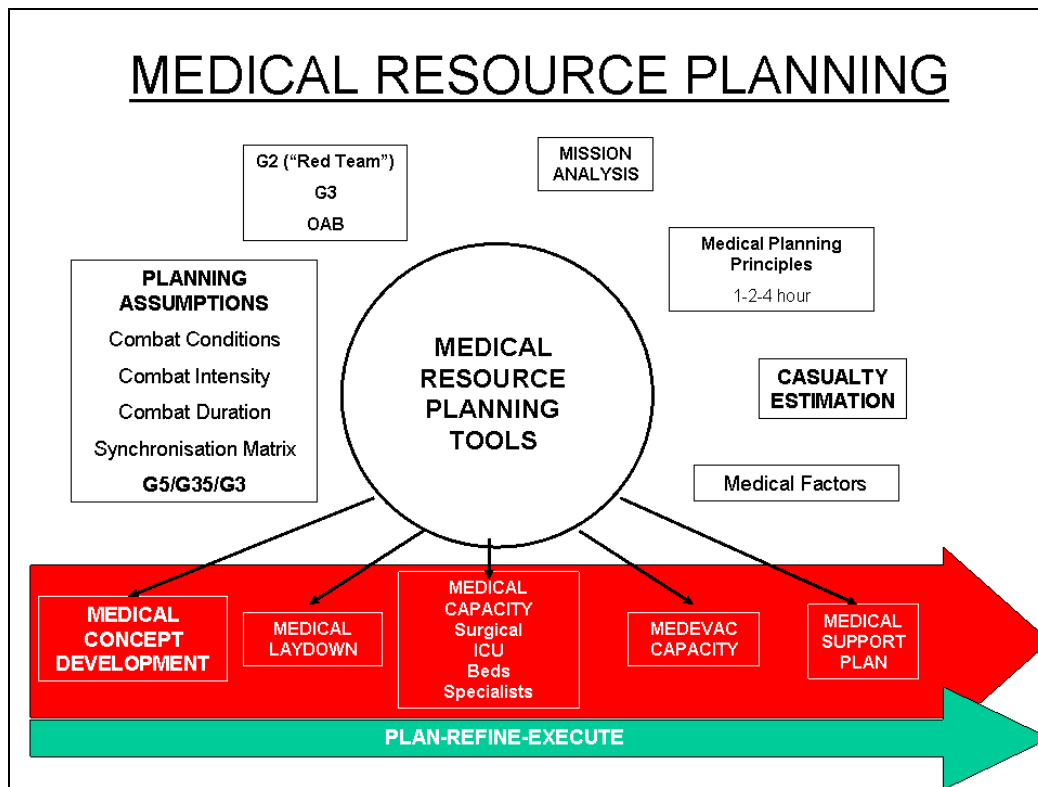
Figure 1



The effectiveness of the medical plan is assessed by a matrix of reports and returns that provide information on the activities of the medical evacuation system and the medical units. This provides the basis for further adjustments in the allocation of resources to provide medical support to the operation.

There is considerable scope for using computer-based simulation and analysis tools to support this process. Figure 2 shows the inputs and outputs of the medical resource planning analysis.

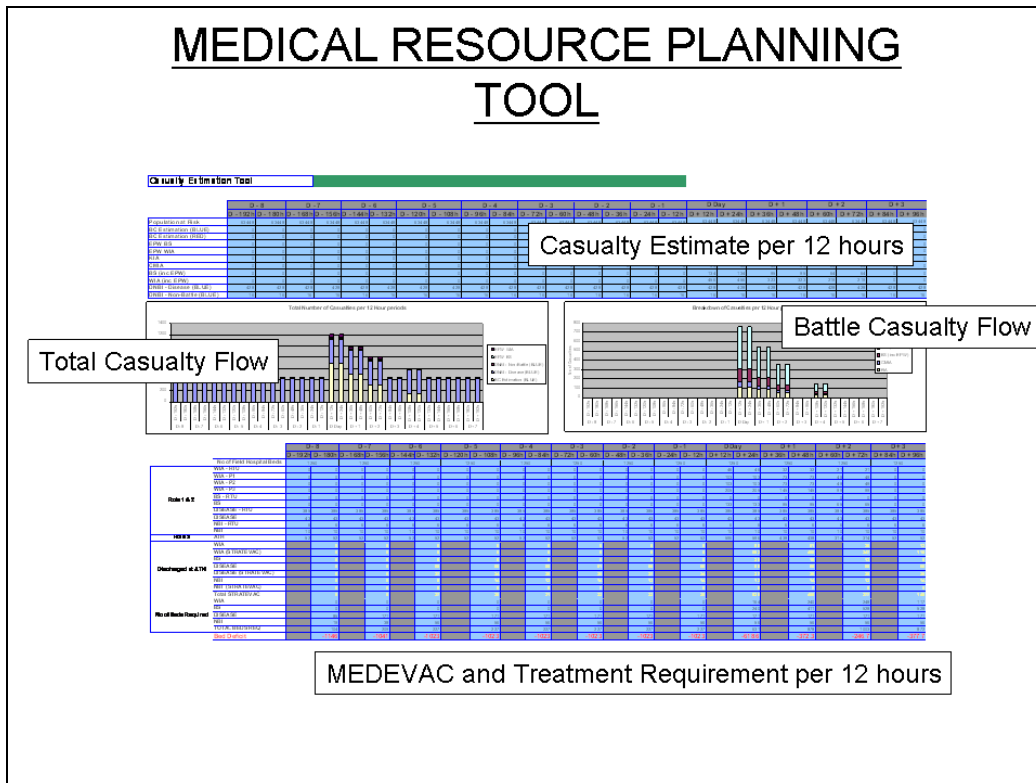
Figure 2 Medical Resource Planning



This analysis can be integrated to link the operational plan by time to the medical requirement. Figure 3 shows a screenshot from one such tool.

Figure 3. Screen Shot - Medical Resource Planning Tool

# MEDICAL RESOURCE PLANNING TOOL



This tool enables medical resource planning to be refined to 12 hour periods and can be used to assist in both the planning of the medical resource requirement but also to compare the actual medical activity from reports and returns with the plan to forecast whether the medical system is sufficient for the next period.

## **Summary**

This paper has considered the planning process for military health services support within the wider framework of the military general staff process. It has proposed a 5 Step analysis, structured on the military Estimate process, to consider specific medical factors in order to develop a medical plan. The paper has closed by considering how this theoretical model is actually used within the Plan-Refine-Execute construct for military planning.



Word count: 2931

## References

1. United Kingdom. Joint Doctrine and Concepts Centre, Joint Medical Doctrine, JWP4-03 2<sup>nd</sup> Edition (Shrivenham: JDCC, Oct 07).
2. United Kingdom. Joint Doctrine and Concepts Centre, Campaign Execution, JWP3-00 3<sup>rd</sup> Edition (Shrivenham: JDCC, Oct 2009).
3. North Atlantic Treaty Organisation. Allied Joint Publication 4-10(A). Allied Joint Medical Doctrine. 2006.
4. Bricknell MCM, Moore GW. Health Risk Management Matrix – A Medical Planning Tool. J Roy Army Med Corps 2007;153(2):87-90