Amphibious Warfare : Medical Planning during Normandy Landings and Lessons for Integrated Planning in Indian Scenario

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Introduction

Amphibious warfare is the use of naval firepower, logistics and strategy to project military power ashore. Over millennia, it has stood as the primary method of delivering troops to non-contiguous enemy-held shores. In ancient times, Greeks, Persians and Norse raiders had resorted to amphibious warfare to gain lodgment on enemy shores. Napoleon failed to conquer England as France was not as strong a sea power and could not venture to cross the channel. Gallipoli landing led by British forces, which ended in a disaster, was the main amphibious operation conducted during World War I.

Some of the successful amphibious operations of the recent times are : the Normandy landings (1944), Inchon landing during the Korean War (1950) and the Falklands War (1982); of these, the Normandy landings were unique in scale of forces employed and the logistics involved.

Mobility, flexibility and surprise are the main features of amphibious warfare. Surprise is the most important element if the enemy is evenly matched as it happened in Normandy landings. These features affect the medical planning and deployment as resource mobilisation needs to be refined to suit the situation. Limitation of an amphibious operation is that the attacker has to build up his strength on enemy shore and later in enemy held territory from initial zero. The likelihood of attacker being massacred, as it happened in 'Battle of Dieppe', is high unless the enemy is caught by an element of 'surprise'.

Complexity of Planning

An amphibious landing of troops on a beachhead is the most complex of all military manoeuvres. The undertaking requires extensive training, enormous planning, huge amount of resources, and intricate coordination of numerous military specialities, including tactics, logistical planning, specialised equipment, naval transport, naval gunfire, land warfare (which include Marines, Commandos and Paratroopers), air power and last but not the least, casualty management and evaluation.

Generally, operational planning, troop movement and deployment, and mobilising logistical resources of all kind get done as per schedule but issues pertaining to casualty management, evacuation, mobilising medical stores and establishing treatment facilities at various echelons do not get planned as well as they ought to be. Reasons could be :–

(a) Operational and logistics planning takes precedence.

(b) Inadequate discussion between operational and medical authorities regarding casualty management and evacuation, and medical stores mobilisation and supply for 'D' Day and beyond.

(c) Inadequate discussion between medical authorities of the three services regarding casualty management and evacuation.

(d) With little or no amphibious planning experience on the part of medicals, there is probably lack of enthusiasm and efforts at integration.

Medical Planning during Normandy Landings

It is interesting to note that Medical planning for assault on German held West Coast of France started in April 1942, nearly two years before the invasion, with planners having little amphibious warfare experience to guide it. Manuals on amphibious doctrine had little useful information about medical operations. War time British Commando raids, and even the August 1942 attack on Dieppe, offered few medical lessons. However past events confirmed that heavy casualties were to be expected. There were innumerable uncertainties and areas of ignorance. Medical stores organisation was in poor shape. However, with progress on other aspects, medical planning too progressed and achieved more than what was desired and expected. Efforts have been made to study the planning processes which have been very well documented in 'Medical Service in the European Theatre of Operations (ETO)'.

Medical planning

Planners struggled to mobilise the following :–

(a) Manpower. Planners faced shortage of medical manpower. More importantly, training needed to be imparted to face the peculiar problems of the warfare with several variables and very little lodgment area.

(b) Diagnostic and Therapeutic Equipment. With difficulty at replenishment, planners had to resort to novel methods at equipping and packing.

(c) Equipping each medical unit / section with stores for primary responsibility of casualty management.

(d) Resources for casualty evacuation.

(e) Replenishment of Medical supplies as the attack progressed inland.

Casualties

Unless the adversary is weak, heavy casualties are a rule. Hence, Medical authorities had to work with uncertain parameters and plan for the worst scenario, which was 'enemy effectively repulsing the landing of troops and inflicting heavy casualties and material losses when there would be no scope for casualty management or evacuation!' Because of the peculiarity of warfare, no single formula could be relied on to work out the number of casualties. The assault force would suffer its largest proportion of wounded at precisely the time when hardly any medical manpower would be on shore to care for them. During the Normandy landings, for planning purposes, it was assumed that the assault forces would suffer 12 per cent wounded on 'D' Day and 6.5 per cent on D plus 1 and D plus 2, with a declining proportion thereafter, if the troops advanced. Using this ratio, Army Surgeons had to think in terms of treating or evacuating over 7,200 wounded on 'D' Day and another 7,800 in the next forty-eight hours, of whom about 3 per cent i.e. at least 450, would be too severely injured to be transported any distance without definitive surgery. Planners had realised that even these estimates were uncertain.

Managing Casualties

Where does one treat the injured? Planners ruled out any attempt to treat the injured on the French shores concluding that such treatment would require more manpower, hospitals and equipment than could possibly be landed during the phase of assault and early build-up. If injured are not to be cared for on the enemy shore, they would have to be evacuated directly from the beaches to hospitals in Great Britain. How does one evacuate the wounded? Evacuate in what?

Casualty Evacuation

Planners decided to evacuate all casualties from the Normandy beaches except those needing immediate surgery to keep them alive and the lightly wounded. Deploying few available hospital ships or smaller hospital carriers had been ruled out because of the risk of enemy fire.

Landing Ship Tank (LST), military designation for naval vessels to carry significant quantities of cargo, vehicles and landing troops directly onto an unimproved shore, were built during World War II to support amphibious operations. As the number of hospital ships or smaller hospital carriers available was inadequate to evacuate the expected number of casualties, planners adopted the policy of maximum evacuation during the initial assault by using returning LSTs (after discharging personnel and equipment) as the main casualty carriers in the absence of other options and alternatives. LSTs were selected as the principal evacuation craft as the ships could embark large number of casualties in a comparatively short time. The ships could also accommodate ambulances and stretcher carrying jeeps. The tank deck could hold up to 300 stretchers. Casualties could be hoisted on board in small crafts or on individual stretchers. The ship's upper decks and crew's quarters could hold 300 additional walking wounded. Any LST could be fitted for evacuation and accommodate a small emergency surgical facility, without reducing its ability to perform its main task. Operationally it was assumed that only 75 stretcher and 75 walking patients would be moved on each voyage of an LST as the ship will face enemy fire and may not be able to stay long enough on the shores after discharging the contents to load up to full capacity.

Army surgical teams complemented LST naval medical teams to provide emergency surgery for casualties taken on board directly from clearing stations during the first days of the attack. 10 Hospital carriers (small ships converted) were later pressed in to service to carry additional medical personnel and supplies to France and then embark patients requiring early and extensive surgery. When emptied of their cargo, LSTs rolled heavily in all but the calmest seas, creating an unstable platform for surgery. As combatant vessels carrying troops and weapons outward bound, LSTs could not be protected with the Red Cross and were legitimate attack targets. Some Army authorities called LST a 'cold, dirty trap for injured men and rotten ships for care of wounded'. In the absence of any suitable alternative, these were the 'chosen vessels' to transport the wounded.

Despite the constraints, LST was 'the only improvised method of removing casualties forced upon the Medical Service by operational necessity.' All objections were overruled by the Allied Supreme Commander.

Medical Cover during Landings and After

Great Britain and the United States were the two major countries in the alliance. Designated authorities delineated the plan and arrived at basic decisions on a number of important issues. Army-Navy division of cross-channel evacuation responsibility, which applied to both British and American forces, was established. Medical authorities of Navy and Army initially and Air Force at a later date, were to coordinate closely from the time operations were conceived to address every important issue of casualty management and evacuation. Responsibility for each service was laid down for tasks enumerated on 'D' Day to 'D' plus 2', which is tabulated below :–

Serial	Task	Responsibility
1.	Establishment of Beach Aid Post and Casualty Clearance Stations	Navy
2.	Collection of wounded on the beaches	Navy and Army
3.	Collection of wounded from inland and move them to the beaches	Army
4.	Loading the wounded on vessels / craft and caring for patients	Navy

	during Evacuation	
5.	Unloading the wounded at home port and removing them to hospitals :– (a) Fresh triage and emergency surgery (b) Transporting less severely injured to inland hospitals to reduce the workload on the local hospital.	Navy and Army
6.	Considering that the beachhead has been secured and troops advance inland, responsibility for further medical cover, casualty management and evacuation rests with the Army.	Army
7.	Establishment of compact lodgment area in which armaments, ammunition and supplies including Advance Dressing Station and Field hospital can be set up.	Advancing troops
8.	Taking over the airfield.	Advancing troops
9.	Air evacuation from conflict zone to home base	Air Force and Army

Backlog of Casualties

Backlog of casualties who could not be evacuated due to many unforeseen circumstances was kept in mind. To meet this contingency, teams from army's auxiliary surgical group were attached to the clearing company of each engineer special brigade medical battalion. These units, the only hospitals on shore during the first twenty four hours or so of combat, could care for a substantial number of severely wounded.

Blood Transfusion

Blood transfusion is indispensable for controlling shock in severely wounded soldiers. This had been more than proven in British experience in the Western Desert and from early American operations in North Africa and Sicily. Whole blood is highly perishable, difficult to store and transport but was found indispensable for controlling shock in severely wounded soldiers. Blood administered as far forward as possible in the evacuation chain, saved lives that plasma alone could not. Americans established European Theatre Operations (ETO) whole blood service in Jul 1943. This service was modelled on the highly successful British Army Transfusion Service. In Normandy operations, only type 'O' blood was used. Blood was processed, prepared for daily shipment on top priority to advance depots for distribution as far as the field hospitals and division clearing stations. Satisfactory storage and transportation conditions were ensured.

Up-to-date estimates of whole blood transfusion requirements in combat surgery were essential. Expected usage rate in the field as per British planning ratio was one pint for 8-10 wounded. Medical service, on the basis of reports from the Fifth Army in Italy, increased its estimate of requirements to one pint for every 2.2 casualties which was much beyond the capacity of collection and processing.

The Surgical Programme

Medical authorities and the consultants defined uniform surgical practice for each step in the evacuation process and this had definite and satisfactory results. War Department Technical Manual 8-210, 'Guides to Therapy for Medical Officers', was rewritten to simplify and make it more useful to surgeons in the field. 'ETO Manual of Therapy' was published in late 1943. Of the manual's three sections :–

(a) Two sections dealt with surgery in clearing stations and evacuation and fixed hospitals. Written in short, simple sentences, these sections concentrated on specific treatment of particular types of injury at each point in the evacuation chain and omitted lengthy expositions. The manual emphasised the need to avoid definitive surgery in the forward areas, unless absolutely necessary to save life.

(b) Third section covered basic medical emergencies from poisoning to neuropsychiatric disabilities.

'ETO Manual of Therapy' was supplemented on 15 May 1944 by an ETO circular on 'Principles of Surgical Management in the Care of Battle Casualties'. The circular reiterated many of the policies and constituted a concise practical guide for fresh and usually inexperienced surgeons from civilian practice at treating severe injuries in primitive facilities under pressure of time.

Usage of Gas and Chemical During War

Planners had perceived the threat due to use of chemicals and gas attacks and issued detailed instructions pertaining to the following :–

(a) Medical precautions against the threat of German gas attacks.

(b) Training for all troops in first aid for chemical warfare casualties.

(c) Issue of eye ointments and impregnated protective clothing.

Preventive Medicine

Based on intelligence inputs, planners tried to anticipate every foreseeable problem, actual or potential, and outline a solution. State of public health in occupied enemy territory was of utmost importance as it would have direct and indirect impacts on the health of allied troops. Water purification and sewage disposal facilities needed to be streamlined. Standard immunisations, personal hygiene and mass sanitation were impressed and practised to contain communicable diseases. Measures were taken to repress commercial sex in areas in which the troops were planned to be quartered or through which they were to pass. Adequate nutrition of troops also was ensured to prevent under nutrition and malnutrition. Functioning hospitals located in enemy territory were audited for quality, capacity and expertise so that available facilities could be utilised to treat the wounded soldiers and sick civilians.

Integrated Planning

Though amphibious exercises have been carried out by Indian Navy over the past few decades, during 80s and 90s involvement of Medicals has at best been peripheral. The reason could be that operational and logistics planning takes precedence and medicals are co-opted at late stages. There is a need for medicals to go in to all modalities of operation and plan for casualty management and evacuation and seek collaboration of Army (which is a major player) and Air Force to evolve an integrated and elaborate plan in all spheres of medical planning. Medical aspects of the operations should get integrated in the tactics and planning of warfare from the word 'go'. With availability of hospital ships, strengthening of support vessels, addition of helicopters and establishing of 'Integrated Defence Staff', things would be different today.

It is noted from the details and events enumerated in the publications on Normandy landings that major planning for casualty evacuation and management rested with the Army. Role of the Navy was primarily casualty evacuation in LSTs and supportive role in casualty management.

Lessons for Integrated Planning in Indian Scenario

It is undoubtedly true that morale of troops depends on the confidence they have in Medical Planning. A Soldier, a Sailor or an Airman goes in to battle facing enemy bullets with the belief that if injured, the medical organisation is geared up to evacuate him to a safe place, treat the injuries and save his life. Hence there is no room for laxity on this count. Following are the lessons for medical planning by the three Services for efficient outcome :–

(a) Integrate Medical aspects of tactics and planning of operations from the word 'go'.

(b) Assess adequacy and competence of manpower (medical, dental, nursing and paramedical personnel).

(c) Training of manpower to meet the demands of amphibious operation.

(d) Scaling of medical equipment (including modern expendable items of every kind).

(e) Equip each medical unit/section/individual with stores for primary responsibility.

(f) Collaboration between Army, Navy and Air Force to plan for comprehensive casualty management and evacuation.

(g) Resources for casualty evacuation – assessment and mobilisation. With the 'Golden Hour' rule and principle, helicopter evacuation of severely injured should be the goal.

(h) Replenishment of Medical supplies as the attack progresses inland.

(j) Collection and transportation of whole blood and also components.

(k) Prepare to meet the Nuclear, Biological and Chemical (NBC) scenario.

(l) Assessment of health status in enemy territory prior to launch of operations.

(m) Treating and evacuating wounded prisoners of war

(n) Treating the sick and injured civilians.

Preparing Senior Medical Officers for the Tasks

A course titled ‘Commander, Amphibious Task Force (CATF)/Expeditionary Strike Group (ESG) Surgeon Course’ used to be conducted at Surface Warfare Medicine Institute, San Diego, California, which provided Navy Medical Officers with training in amphibious operations, expeditionary warfare, and associated operational health service support training. On qualifying the course they would be prepared to serve effectively as a Senior Medical Adviser to a Task Force/Expeditionary Strike Group Commander, eligible for assignment as a Commander, Amphibious Task Force (CATF)/Expeditionary Strike Group (ESG) Surgeon and Officer-in-Charge of a Fleet Surgical Team. This had a Security Classification as Unclassified and duration of the course was 10 training days. Subject matter experts presented lesson topics and US Medical Department officers and enlisted personnel currently active within the surface community provided course presentations, as did past CATF Surgeons, Fleet Surgical Team leaders, and other service members.

Till now Indian Medical Officers have not been deputed for any course which prepares them for this role. It is essential that Medical Officers (Senior Surgeon Commanders and Surgeon Captains/equivalent from Army) are exposed and prepared for the role to execute medical tactics and plans for amphibious exercise/ warfare. Deputing them for such courses should be considered.

Conclusion

There is a need to evolve an elaborate template of medical planning in consultation with ‘Operations and Planning Branch’, which can be adopted for a specific exercise with necessary changes. It is considered imperative that Medical authorities of Army, Navy and Air Force comprehensively plan casualty management and evacuation, scaling and organising medical manpower, establishing the Field Hospitals and replenishment of stores as Army becomes the major player once the troops are landed on the enemy held shores. It is considered essential that Medical Officers are deputed to undergo training in planning for amphibious warfare in the USA or any other identified countries where such training is imparted.

Endnotes

1. http://www.history.army.mil/html/reference/Normandy/TS/MD/MD6.htm (Chapter VI, Preparations for Invasion, Medical Service in the European Theater of Operations)

2. http://www.hnsa.org/doc/pdf/jp3_02.pdf (Joint Doctrine for Amphibious operations)

3. http://www.britannica.com/EBchecked/topic/21501/amphibious-warfare

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