

## **LEGAL PROTECTION OF AERO-MEDICAL EVACUATION IN WAR-TIME**

by E. Evrard

*The International Committee of the Red Cross is aware that international law gives inadequate protection to aircraft used for medical evacuation. It considers that the subject is one which calls for further study and therefore takes pleasure in reproducing in the following pages a translation<sup>1</sup> of important extracts of a recent article on legal protection for aircraft used as air-ambulances in time of war<sup>2</sup>. This article is of particular interest, coming from Dr. Evrard who, being a flyer, can look at the problem from a practical as well as a legal point of view.*

*In the first part of his paper, the author points out that the special status of flying ambulances under the 1929 and 1949 Geneva Conventions is completely inadequate. He seeks out and analyses the causes of the technical and legal obstacles.*

*The main technical difficulties are related to the identification of aircraft used as air ambulances, the operation and maintenance of a squadron made up only of aircraft belonging to the Medical Service and flight safety requirements in time of war. About legal difficulties, he mentions inter alia the need to obtain pre-flight authorizations under agreements between belligerents. This situation is a hindrance to the operation of air evacuation and transport of medical personnel and equipment.*

*Dr. Evrard concludes the first part of his study by pointing out that the theoretical immunity conferred to air ambulances by the 1929 and 1949 Geneva Conventions is hardly practicable. Consequently, belligerents, aware of the vital importance of evacuation of their casualties by air, use for this purpose aircraft which are not exclusively*

<sup>1</sup> Author's own version.

<sup>2</sup> This article was published in *Annales de droit international médical*, (No. 12, 1965), Monaco, to which we extend our thanks for permission to print.

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*assigned to such missions. This involves the casualties in certain risks during flight ; the danger may be slight where total mastery of the air has been acquired, but considerable in the absence of superiority in the air.*

*Next, the author envisages the possibility of a new statute covering aircraft used for transportation of patients and medical personnel ; it is this section of his monograph which we now quote. (Ed.).*

To see the shortcomings is one thing; to overcome them is another one, and often the most difficult. This is certainly the case with aero-medical evacuation.

It is apparent from the outset that the solution does not lie in the mind and the letter of existing legislation. There is no mere adaptation which could make effective those enactments which have revealed their inapplicability. In spite of appearances, the helicopter is even in a less favourable situation than the aeroplane.

Exclusively medical aviation does not exist.

Nevertheless, a form of medical air transport exists, which has proved its value in time of war. Aircraft used for this purpose only assigned to the job when the need arises, for their essential mission is not medical. Logically therefore the solution should be sought in the protection, not of the aeroplane or helicopter, but of the medical mission.

The identification system for a medical mission is therefore of capital importance.

We have already pointed out that the requirements of article 36 (First Convention) subordinating the immunity to which medical aircraft are entitled to the conclusion of previous agreement between belligerents to determine altitudes, hours and routes, are in fact of such a nature that any legislation designed to protect medical aircraft is totally inoperative. As stated in the Commentary on the Geneva Convention<sup>1</sup>:

“The experts who recommended this solution pointed out that under conditions of modern warfare, systems of identification based only on the painting of machines were useless. Aircraft were sometimes fired upon from the ground, or from other planes, before

<sup>1</sup> Commentary on the 1st Geneva Convention of August 12, 1949, published under the general editorship of Jean S. Pictet, by the ICRC, Geneva, 1952, pp. 288.

their colour or markings could be distinguished. Only previous agreement as to routes, altitudes and times of flight could, in their opinion, afford medical aircraft a real degree of safety and provide belligerents with adequate safeguards against abuse".

Consequently, it may be logically deduced that if the identification of an aircraft performing a medical mission is made by other reliable means, these strict requirements of a previous agreement which "ground" aircraft, particularly helicopters, assigned to medical missions can be eliminated.

If it is possible to abolish these requirements, a statute applicable to medical air transport can be reconsidered on realistic bases.

The problem of aircraft identification is not new. During the Second World War and the Korean War, the belligerents recognized this problem as being of considerable importance. The International Civil Aviation Organization (ICAO) which has been entrusted with the framing of regulations governing commercial aviation, particularly so far as safety is concerned, also continues to attach considerable importance to this question. Even keener is the interest taken by military circles. Indeed, the use of ground-to-air and air-to-air missiles in defence against enemy air attack makes rapid identification of aircraft an essential factor. Defence against high speed aircraft flying at low altitude to avoid radar detection also calls for quick identification. Consequently, legal experts and doctors involved in the study of the identification of aircraft in charge of medical missions now have available the results of a great deal of recent research.

We do not pretend to be able to put forward proposals to solve this difficult problem. Our intention is merely to seek possible ways and means to achieve a practical solution.

In view of the complexity of the problem, it would seem rational to consider three aspects:

- a) The circumstances which justify a protective regulation to make safe medical missions;
- b) statutory specifications for methods of medical mission identification;
- c) the practical value of some methods in accordance with these specifications.

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### a) The terms of the problem in time of war

1. Whatever type of aircraft is used, it will always be an excellent site of observation when flying near enemy positions. Even if it displays the Red Cross, belligerents would hardly allow an airplane to take advantage of this possibility of observing and gathering information (meteorological or photographic for instance) while on a medical mission.

Consequently, flight over enemy territory, zones or positions would always be denied.

It would be useless to include in any international protective statute that such flights should be permitted. To do so would lead to disaster. In any case, the third paragraph of article 36 stipulates that, unless agreed otherwise, flight over enemy territory is prohibited.

2. In advanced zones of friendly territory, evacuation by air could be possible under certain conditions, preferably by helicopter or aircraft designed for short take-off and landing. Nevertheless, in the absence of immunity procured by international law, the success of such an attempt would depend upon the degree of air superiority and on certain favourable conditions on the ground, despite the fact that the helicopter can sometimes take advantage of a low ceiling and poor visibility.

Even in these conditions, the aircraft may be detected by enemy radar and be the target for shells, rockets or missiles with or without target-seeking devices. Obviously aircraft performing medical missions in such a zone must be identifiable, first and foremost, by their own troops. Without local air superiority and reliable identification by friendly troops, evacuation of wounded by air depends on personal skill and is successful only in rare individual cases. For the side which does not have local air superiority, the possibility of evacuation by air would be inconceivable without the safeguard of an appropriate, but at present nonexistent, international regulation.

3. Under air cover of fighter squadrons, transport planes in direct support of tactical operations could only reach airfields located at a certain distance behind the front. There, they would load the wounded for the return flight to a well organized airfield. The

medical part of such missions should also be clearly identifiable and protected.

In fact, protection, on the outward and homeward flight, is provided by fighter escort. Recourse to an international protective statute would hardly ever be justified. It could however be considered, in the case, for example, of flight over sea from one continent to another when neither side has mastery of the air.

4. Further back, well behind the combat zones, heavy transport aircraft would come into operation. These would be, for the most part, jet planes, necessarily flying at very high altitude. These jet aircraft, with very great operational range, are in little danger of attack. The enemy would have to bring into action fast interceptors, of long range of action, armed with rockets and missiles. This eventuality cannot be discounted. During the Second World War, the use of Fokker Wolf Condors gave the Germans air superiority for a short time over the Bay of Biscay. They hindered air traffic between Lisbon and Gibraltar and between Lisbon and the United Kingdom; they did not stop it. Nevertheless this example shows that protection of the long range transport aircraft cannot be totally neglected even if it appears less urgent than protection for aircraft flying within the vicinity of combat zones at medium and low altitudes. The advisability of introducing international legislation applicable to this latter form of aero-medical transport must not therefore be disregarded.

**b) Identification of aero-medical mission - Criteria**

1. The solution to this problem must be simple. It must be readily understandable to any military personnel in the army, air force or navy so as to permit detection and direct visual identification.

2. The solution should be applicable to all types of aircraft and to all types of medical missions, e.g.: helicopters operating in forward zones, long range air transport, high altitude flights where interception by enemy fighters is probable, etc. It should therefore permit identification by land troops and by fighter planes.

3. The solution should be practicable by day and night and in the most varied atmospheric conditions (fog, cloud, rain, etc.).

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4. The solution should not jeopardize flight safety, should not reduce the aerodynamic characteristics of the aircraft design, and should not prevent its convertibility to other missions.

5. The solution should permit identification from a sufficiently great distance by the intercepting system and by ground troops armed with weapons capable of attacking the aircraft whatever the altitude at which it is flying.

6. The solution should permit a reliable and rapid identification by any of the three fighting services, without the use of unusual or complicated apparatus. As detection always precedes identification, the interval between the two must be reduced to a minimum and if possible they should be simultaneous.

### c) Means of identification applicable to aero-medical missions

We must make a distinction between visual and non-visual means (radio, sound, infra-red rays, etc.); we shall then draw practical conclusions on the methods to be taken into account.

#### 1. *Direct visual identification*

Detection of an aircraft from the ground in clear weather is seldom possible from distances exceeding five miles. Identification by the aircraft silhouette is possible when the range is about three miles.

Identification by the colour of the aircraft or of markings on it (coloured stripes, red cross, etc.) is possible at a range of a little more than half a mile. The range may be greater if the colour used is a luminous yellow-orange.

Identification based on the shape of the aircraft or the colour of the whole or part of it and on the red cross marking on a white background is doubtful by day and impossible by night.

The emission of coloured smoke by the aircraft can hardly be considered suitable. It does not comply with the criteria we mentioned above. The defects of such a system are obvious. Detection and identification of aircraft using light signals, by day or by night, are possible other considerations such as atmospheric conditions being equal, at a distance at least thrice the range of spotting

based on design and colour of the aircraft. Light signals are therefore to be recommended. During the day the most clearly discernible light against a grey-blue background and in atmospheric mist, is red. Red light is also excellent to permit detection at night. Detection of aircraft during the night is possible from present day navigation lights at 700 metres in cloudy weather, 1,400 metres when the sky is clear, 2,000 metres by quarter moon and 3,000 metres by full moon. It is planned to introduce a new system whereby navigation lights will be visible from a much greater distance. Detection and identification are much easier when the aircraft has flashing rather than continuous lights. As navigation lights are red, white and green, the rotating light signifying an aero-medical mission will probably have to be some other colour. Furthermore, transport planes already have a rotating red light which is visible from about 6 miles. Consequently the adoption of a coloured light as means of identification would require the previous agreement of the International Civil Aviation Organization (ICAO) but such a light should be so characteristic as to preclude confusion or abuse.

It would therefore be for the Convention to lay down these characteristics, for example, frequency and duration of flashes. There would be nothing to prevent the use of a code system by short and long flashes provided this would make identification easier by all fighting personnel.

The intensity of the light should also be stipulated. No doubt experts should decide the compulsory minimum intensity.

The setting of the light or lights on the aircraft would also have to be decided so that to avoid detracting from the aeroplane's or helicopter's aerodynamic design and to prevent confusion. It seems to me that the underface of the nose of an aeroplane and the underface of the cockpit of a helicopter would be suitable locations. Experts would readily come to agreement on these details.

Such a lighting system could be permanently installed without any difficulty in all transport planes and helicopters. It would be connected to the aircraft's own source of electric current. When the mission is of a medical nature, the pilot would merely have to switch on the system until completion of the mission.

It might be objected that this identification system does not make use of the sign of the red cross on a white background.

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There is an easy reply to this objection. It would not be the first time that the protection afforded by the Conventions is ensured by means other than the display of the red cross. Official recognition has been granted to other signs. For example the red crescent or the red lion and sun have been admitted in order to respect certain religious susceptibilities, whereas in fact, as everybody knows, the red cross is the Swiss emblem with the colours inverted; it was chosen as a tribute to Switzerland, Dunant's homeland, and no religious significance is attached to it. As this precedent exists and is recognized by the Conventions, why not to accept another sign—a simple, effective light signal—for use by aircraft accomplishing medical missions?

Furthermore, civilian ambulances in many countries and even military ambulances use light signals to facilitate passing through congested streets and cross-roads without having to observe the traffic regulations.

If such a system were universally admitted and recognized it would make profit of the considerable progresses resulting of researches in illumination for day and night photography. There are nowadays simple and relatively not bulky devices using gas filament tubes to produce a flashing light. These flashes are said to be easily visible in clear weather in broad daylight up to 15 miles away and by night up to about 46 miles.

Therefore, there are in existence simple and powerful lighting systems in accordance with the specification mentioned above for identification by day, night and all kinds of weather. As their range is limited only by the line of sight, for the ground forces, they would enable simultaneous detection and identification.

This does not however mean that light signals would be suitable for all aero-medical missions. They would, for instance, not solve the problem of protection for transport planes at medium altitude or in clouds and certainly not for jet aircraft which have to fly at very great altitudes. Being detected by radar from very great distances, they would be attacked by rockets without any chance of their medical mission being identified only by direct visual methods. As jet aircraft are used on a large scale for air evacuation, it is obvious that visual methods which may be satisfactory in some circumstances but which are inadequate for jet aircraft, must

forcibly be supplemented by some long range identification system. This question will be raised later.

We deliberately omit the use of rockets and other flare techniques in visual identification of medical missions. It is true that the system is cheap, convenient, allows all colour patterns and gives extremely brilliant light. They have the disadvantages, however, not only of an outbreak of fire by accident, but also of the brevity of the signal, so that in many cases the crew might have to continually send off these flares. Moreover, at high speeds a few seconds interval will put several kilometres between the plane and the flare. In addition, flares are not so reliable as an automatic electric system. Furthermore, although flares can be used by day or by night, the intensity of their light depends on meteorological conditions, and their range for identification purposes is appreciably less than that of the flashing lights advocated above. In our view therefore, the use of flares cannot be adopted as a method for identification of medical missions.

## *2. Indirect methods of identification (radar)*

Amongst all identification systems, those which depend on direct vision are the most simple and the most reliable. Light signals are of this type, but unfortunately their range is restricted. Provided they meet with some standards, they are satisfactory for aero-medical missions at low altitudes, i.e. those undertaken by helicopter. This applies also to missions carried out by transport planes flying at relatively low altitudes and liable to be escorted or intercepted by fighters. Even so, aircraft displaying lights must manœuvre in such a manner as to be constantly visible and this is not always possible. Visual methods are inadequate for high and medium altitude flying. Aircraft assigned to medical missions at such altitudes would be detected by radar and should be able to reply to calls from the ground or from another aircraft.

This requires a system of response based on a simple code and having adequate range. Aircraft interrogation radar systems do exist already; they permit recognition of a friend or foe. These systems (IFF—Interrogation Friend or Foe) are based on identification of radar echoes emitted by a plane interrogated from a ground

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station or from another aircraft in flight. Consideration could be given to the setting of such a device in any aircraft liable to be assigned to an aero-medical mission. The Convention should therefore be able to make it an obligation for a particular type of IFF system operating on a specific frequency to be restricted internationally to aero-medical missions.

In addition, belligerents should promise not to interfere on that frequency. The system assumes the use of receptors capable of identifying IFF signals in radar stations and guided missiles stations and, generally speaking, in all units equipped with radar. Air ambulances would thus be safe from attack by guided missiles and ground-controlled interceptors, as the stations from which these operate could identify the aircraft engaged in aero-medical evacuation. There would be one risk: interception by fighter aircraft, not under the control of a radar station. This risk is slight and can be reduced by the use, at low altitude, of the rotating light mentioned above; this gives the advantages already mentioned of short range identification, i.e. by direct vision.

Needless to say, the IFF radar system can be used not only by jet aircraft on aero-medical missions and flying at high altitude, but also by any other type of aircraft at low altitudes. The system is however open to some criticism. First, it would make it easy to conceal a military mission under the misleading pretence of a medical mission. The reply to this, of course, is that no distinctive sign or code is inaccessible to the charge that it can be used perfidiously by a belligerent who has taken such a decision.

Assuming that the experts agree with the adoption of an international IFF radar system for the identification of aircraft on medical missions, there would still be the difficulty of communicating the information to all units: the aircraft would be identified only by the radar control station. There would still be needed to establish a liaison between the radar unit and the batteries and launching ramps. But even in spite of such liaison, there will never be complete safety against a technical failure or bad transmission nor against the unpredictable personal reaction of a gunner. In 1943, for instance, Typhoons were confused with FW 190's and in spite of all the precautions taken for the invasion of the Continent in 1944 many errors were made during these events. Other difficulties which may

be mentioned are the crowding of radar screens, the tricky problem of the differentiation of the objects appearing on the screen, and the by no means negligible influence of the cost of the ground equipment. Consequently, although IFF identification might theoretically be possible, international protective legislation for medical missions should not underestimate the difficulties of such a system.

### 3. *Non-visual methods*

*a) Radio.*—As all transport aircraft, whether military or civilian, are equipped with radio, it seems, at first, that it would be easy and useful to supplement visual identification by an official system of identification by radio. This solution is, of course, mentioned in the second paragraph of the comments on article 36 in volume I of the Commentary on the Geneva Convention (pages 289-290).

“The second sentence of paragraph 2 lays down that medical aircraft are to be provided with any other markings or means of identification that may be agreed upon between the belligerents concerned. This is a wise provision, as it leaves the way open for any technical improvements in this field. Certain facts lead one to suppose that, with the resources available today, great improvements could already be made in the methods by which medical aircraft are identified. The main means of establishing the authenticity of the relief mission of an aircraft would appear to be the permanent contact it can establish by radio with the ground and with other aircraft. Every aircraft now has its own code signal. Surely a special international signal for medical missions could be agreed upon. Similarly, a short international code, like those used in navies and air forces, would make it possible to communicate with the aircraft during its mission, and question it as to the nature of the latter and the way in which it was to be carried out. The same means could be used to give the aircraft instructions regarding its flight and, if necessary, order it to land.”

Therefore, it would seem in a very superficial study of this question that the use of VHF or UHF would be relatively simple both for transmission and reception. These systems are practicable at any time, by day and night, and in all weather conditions. It would in no way prevent control by friendly or enemy interceptors

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or by the fighters of a neutral country over which the aircraft might fly, as permanent radio contact with the various radar control stations would be maintained throughout the flight. If every aircraft on a medical mission over territory where it might be intercepted transmits a continuous signal in accordance with specifications laid down in the Convention, it could be identified by all radio stations in charge of the tactical air defence. Deeper studies, however, show that whilst this system is simple in theory, the practical means for its implementation are not available. It would require all control stations, defence units, guided missile launching stations and all interceptor aircraft on the route to be listening constantly on the frequency laid down by the Convention. This is obviously impossible.

Even if such permanent monitoring on the special frequency were possible, it would not enable interceptors of both sides to pin-point the aircraft performing an aero-medical mission. Only the ground stations could do this and many of them have not the necessary equipment. In addition, these ground stations would constantly have to diffuse to the fighting units the characteristics of the medical mission. With regard to the possibility of reserving special air corridors exclusively to aero-medical missions, it is utopian, in time of war. Although the method, at first, appears attractive, it is in practice fraught with inevitable risks. It will always remain so; we feel, therefore, that it is not necessary to dwell on this possibility.

*b) Ultra-violet and infra-red rays.*—Systems based on these rays have several disadvantages, the main one being that they require special detection equipment and are not absolutely reliable in all weather conditions.

*c) Sound.*—Despite the considerable progress made in the field of detection by sound, it remains an unsatisfactory method.

### 4. Conclusions

The foregoing brief review of visual and non-visual methods of identifying aircraft performing medical missions under conditions of modern air warfare leads to the conclusion that only two methods deserve to be taken into consideration by experts, viz:

- a) A system of electronically controlled flashes of a frequency to be specified, by means of a device aboard the aircraft. Its location in the aircraft and the colour of the flashes should also be specified;
- b) the use of a radar identification system of the IFF type for use exclusively on medical missions and transmitting on an internationally recognized specific frequency.

It would be advisable for both systems to operate simultaneously. Transport aircraft requiring the protection of an international statute should therefore be equipped with both systems, as they fly by day and by night, and are sometimes hidden by cloud. Heavy transport aircraft, especially jets, fly at very high altitude so that reliable identification under all conditions necessitates the system of flashes and also the IFF radar. Nevertheless, recognition of an aero-medical mission by one identification system only should suffice to ensure protection. Normal flying conditions for helicopters (by day only, at low altitude) should make the visual system of flashes sufficient to identify a medical mission. The elaborate IFF radar system is in most cases unnecessary for this type of aircraft.

It may be assumed that simple and effective systems corresponding to the criteria mentioned above, will be evolved and developed in future years.

For this reason, we believe that technicians and operational experts should not be forgotten when the authorities concerned take up again the study of an international protective statute for aero-medical evacuation.

Amongst the difficulties obstructing the application of the Geneva Conventions to aero-medical evacuation, we have mentioned the need to paint and to remove the sign of the red cross on a white background each time the occasional medical mission alternates with a military mission. The difficulties are greater for aeroplanes than for helicopters, as we mentioned earlier.

If an international light signal is accepted as means of identifying a medical mission, could it not be granted that this signal receives the same value as the distinctive red cross sign so that this emblem, painted on the aircraft could be suppressed? Where really necessary, this derogation could be limited only to aeroplanes

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or even to those designed to fly above a well fixed altitude level to be decided by experts. For aircraft cruising below that minimum ceiling, the red cross would still be compulsory, in addition to the system of flashes; consequently this would apply to all helicopters. It would therefore be necessary for the constructors to fit helicopters and certain types of light aircraft with devices allowing to fix and to remove panels with a red cross on a white background. The solution to this problem therefore appears to be simple.

If unanimous agreement is reached on this subject of easy and reliable identification of medical missions, we may hope that most of the legal obstacles will disappear. We must at all cost cancel the preliminary agreement, between belligerents, laying down conditions to be observed during these operations. This agreement, arising from the shortcomings of the identification of an aero-medical mission, becomes superfluous as soon as identification of the medical mission is possible at all times and everywhere without any difficulty.

Problems concerning medical or other personnel captured as prisoners of war in the course of a recognized medical mission can also be easily settled. These problems do not prevent application of the Conventions. They have of course a great importance. They must be settled clearly and realistically. But they are by no means a stumbling-block. Flight over enemy territory is out of the question, for the reasons already explained.

There still remains the problem of flight over neutral countries, but we may believe that agreements permitting such flight under certain conditions would also be considerably facilitated by modern methods capable to identify aero-medical missions. In addition, it must be borne in mind that medical missions performed by helicopter will never require flight over neutral territory and that long range transport aircraft can, if necessary, avoid to fly above neutral territory. This would not help completion of the medical mission, but it would not prevent it. As can be seen, in practice these legal problems, considering the present performances of aircraft, are by no means obstacles of the same nature as they were in 1929, or even in 1949, and they should not prevent the grant of protection to the majority of aero-medical missions.

Must a distinction be made between the status for helicopter and that for airplane when on medical mission ?

Recommendations emitted by many societies and legal commissions (50th International Law Association Conference, the I.L.A. International Medical Law Commission at its Liege meeting in January 1962, the Société française de Droit International Médical in its session on June 14, 1962) have drawn a special attention on this problem, which is important for army medical services in war-time, of the protection of helicopters on medical missions.<sup>1</sup> These recommendations give support to the warnings issued by doctors and legal experts.

The Société Internationale de Droit pénal militaire et de Droit de la guerre included this question in its 1964 programme and directed its working group for the protection of human life in modern warfare to make a thorough study of the problem.

These studies and recommendations, all concentrated on the problem of legal protection of the helicopter, might lead to suppose that the doctors and legal experts, specialists in international medical law, discouraged by the complexity of a protective statute covering all types of aircraft involved in aero-medical evacuation, or by the deep reluctance so far displayed by military circles to grant immunity to airplanes performing medical missions would prefer to find a solution restricted to helicopters considering that they are particularly vulnerable on their missions in forward territory when they collect and evacuate casualties.

Any such attempt to give a special status only to the helicopter would not be appropriate Furthermore it would not be justified from a technical point of view.

1. It would not be appropriate because it would delay further the promulgation of regulations governing the status of aero-medical evacuation and it would aggravate what Médecin Général Inspecteur A. Schickelé denounced as "the mistake which, in general, rendered inadequate the work of Geneva. Instead of being

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<sup>1</sup> Cf.: Cilleuls (*Revue Internationale des Services de Santé*, August - September 1962, pp. 407-410); Monnier (*Revue du Corps de Santé Militaire*, 1957, pp. 392-401); Petchot-Bacqué (*Le Médecin de Réserve*, March - April 1960, pp. 43-49); de La Pradelle P. (*Bulletin International des Services de Santé*, August 1954, pp. 376-380); Schickelé A. (*Revue Générale de l'Air*, 1950, No. 4, pp. 847-854), etc.

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considered as normal vehicles, suitable for medical transport, just as any other vehicle, an automobile or a train, aircraft were placed in the frame of air warfare, which is not at all, their normal location<sup>1</sup>."

If we were to start making distinctions between various types of aircraft, why not prepare in the near future a regulation applicable to vertical take-off aeroplanes, if these prove to be advantageous on medical missions? And then a regulation for light aircraft, and another for high altitude jets? Moreover, technical and military developments in helicopters are still in full swing. It would therefore appear most unwarranted to neglect "aircraft" as a general concept and to concentrate on the technical characteristics of a type still in the process of evolution, merely on the grounds, for instance, that its system of sustentation in the air is a rotatory one and allows it to hover.

2. There is no justification for such differentiation. The inevitable revision of the texts of the Convention related to air evacuation in order to adapt them to present-day conditions of warfare, must take into account three essential points which are not only applicable to the helicopter but also to all types of aircraft.

- a) Identification of an aero-medical mission by additional modern methods, both visual and non-visual. These methods already exist and could be used for all types of aircraft, including helicopters. Some are simple and convenient. Adoption of one or two such methods would meet a genuine need for protection of all types of aircraft.
- b) The suppression of previous agreement on altitude, route, time, etc. These requirements make article 36 of the First Convention useless for all types of medical aircraft. If identification is easy and reliable for all ground, sea and air forces, of both sides, this clause, which precludes the use of medical aircraft, may be eliminated, as there is no justification for it.
- c) The practical limits to legal protection for aircraft performing medical mission over various areas in the theatre of operations. These limits should be defined for all types of aircraft. The helicopter is not an exception, although military doctors and

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<sup>1</sup> Quoted by P. de La Pradelle: *La Conférence Diplomatique et les Nouvelles Conventions de Genève*, August 12, 1949, p. 203.

experts in international law have apparently focused their attention on this type of aircraft because the problem of legal protection for the helicopter is particularly acute in combat zones where it is used to collect the wounded and to evacuate them to casualty clearing stations and field surgical hospitals. To identify the problem realistically, two factors must be taken into consideration:

— Unarmed military helicopters, both light and heavy, will be used by the medical service much more frequently elsewhere than in the forward areas. They will be used for evacuation of patients from mobile and semi-mobile hospitals and field hospitals in divisional sectors to medical centres located in the rear zones, for final or special treatment in or far away from the areas occupied by the fighting forces. The risks involved in these evacuation operations vary, depending on the degree of control of the air at the time. They consist especially in surprise attack by single enemy fighter planes or formations in low altitude raids. If a medical mission is identified by appropriate light signals, attack on an helicopter can no longer be justified or excused since the helicopter crew flying over such areas cannot observe enemy lines or movements, being too far away.

When aero-medical evacuation is performed outside the combat zones and the forward areas, the risk of surprise attacks is reduced, but not to the extent that legal protection may be completely neglected.

It is quite another matter in the forward areas or in sectors where there is a constantly changing front or where the territory is controlled by enemy guerilla forces. An helicopter, like any aircraft, will always be considered by belligerents as an excellent site of observation. It would therefore be an utopian scheme to wish to grant legal protection either to an aeroplane or to an helicopter when flying over a territory occupied by enemy forces.

In respect of flight over zones of naval or land operations, it may be that concepts apparently build hastily and too rigidly on the basis of special conditions encountered during the Korean war, should be revised and modified, concerning the doctrine of systematic, or at least common, use of the helicopter for initial evacuation of the wounded.

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It has in fact been observed since that time, in the light of military operations in Algeria and Vietnam, that the helicopter is extremely vulnerable to firing from ground forces even with light weapons.

### How can helicopters be protected on such missions in the forward areas

"Aircraft, like medical transport on land, are placed on the same footing as mobile medical units<sup>1</sup>".

The protection of mobile medical units is governed by articles 19, 21 and 22 of the First Geneva Convention. By making the guarantee of respect and protection laid down in these articles applicable to aircraft, and thereby to helicopters performing aero-medical missions, through appropriate enactments, it would seem possible to find some reasonable basis for a solution. It would however be necessary that all air evacuation be construed as a part of the general frame established for transportation of wounded, sick, and medical equipment, i.e., in the frame of article 35 of the First Convention.

Taking article 19 as a base, the following clause could be proposed: "The responsible authorities shall ensure that medical missions performed by aircraft shall not be undertaken, as far as possible, where their safety is imperilled by attacks or possibility of attacks against military objectives".

Taking article 21 as a base, it would be possible to draw up a clause stating "the protection to which aircraft performing medical mission are entitled shall not cease unless they are used to commit, outside their humanitarian duties, acts harmful to the enemy. Protection may, however, cease only after due warning has been given, stipulating, in all appropriate cases, a reasonable time limit and after such warning has remained unheeded". In "acts harmful to the enemy" must of course be included, the spotting and observation of enemy positions and movements.

It must be admitted that if all risks of justified accusations of abuse is to be eliminated, the collection of wounded in the fighting zones is doomed to remain what it has always been: a slow and

<sup>1</sup> Commentary on the 1st Geneva Convention of August 12, 1949, Geneva, 1952, p. 288.

painful evacuation of the wounded to first aid posts by stretcher bearers hiding and sheltering from firing as best they can.

These laborious, dangerous and slow conditions in collecting wounded are to be regretted in a time when a flying machine ideally suited to simplify and to accelerate evacuation of serious casualties is available. But such regret does not change the fact that when an helicopter is a directly visible target for the enemy, it is at the same time very frequently a potential observation post of enemy positions and movements. Whilst we may deplore the impossibility of suppressing all restrictions on legal protection for "flying ambulances", it must be admitted that an ambulance on a hill-top overlooking enemy positions could also hardly be tolerated by the enemy, on the base of article 35.

The foregoing considerations only take into account the main aspects of the use of helicopters on medical mission in connection with the military requirements and those of the medical tactics. The propositions suggested would in practice certainly not ensure by any means perfect protection for medical missions performed by helicopter, as such aircraft operating in forward areas above the combat area would very often not be entitled to that protection for reasons connected with the tactical situation. There would, however, have the advantage that these limits would be clearly defined. Missions entitled to legal protection would in any case include the major part of those which would be required from helicopters detached to the Medical Service in time of war or armed conflict. Missions which by their very nature would preclude them from being entitled to legal protection are of course the most spectacular, and very often require a lot of courage. It must however be admitted that they are relatively infrequent.

For certain operations in the forward areas where the danger is considerable, and in the absence of legal protection, it is the responsibility of the Command and its medical advisers to provide armed protection, airborne or otherwise, or to take the calculated risk involved in any military operations in wartime.

E. EVRARD  
Général-Major Médecin (Belgium)