

NATO Multinational Medical Operations and the Requirement for Interoperability and Data Exchange

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NOTE

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As we discuss interoperability and force protection, it is important to realize that NATO military forces did not develop the ability to successfully operate together simply through long association, but through a structured and focused process of agreeing on and implementing common standards in operations, logistics, materiel development, and administration. For the expansion of multinational medical operations, a sine qua non which has been well demonstrated is that of standardization. I know of no one who would dispute that. There are many international agencies and organizations working in the realm of technical and communications standards, and some working in the area of clinical standards, but few are working in the arena of operational standards. NATO is one exception—All NATO operational doctrine is founded on the principal of interoperability. This concept requires that national forces or systems are able to operate together in order to achieve a task or mission. However, interoperability does not necessarily mean commonality of systems or equipment. The key is compatibility and compliance with industry equipment and software standards. Therefore, I want to discuss the basics of the NATO Standardisation Process and how it works, with specific reference to current medical standards and Information Exchange Requirements. Areas I will cover include: What Standardisation is; Why it is needed; How we accomplish it; What is covered by medical standardization; and What are Information Exchange Requirements.

Recent NATO military operations in the Balkans and Afghanistan have demonstrated both an increased need for and a lack of adequate interoperability in the area of Medical Support. This is a major change for NATO—From the founding of the Alliance through the end of the cold war, the basic NATO operational plan was that of shoulder-to-shoulder national units, the old linear battlefield, with a clearly-defined “front”, “enemy”, and “rear areas”. Within those units, the entire medical care system was a national responsibility, and it was foreseen only as an unusual occurrence in which patients of one nation were provided care in medical facilities of another nation (Figure 1). Within its zone, each nation was responsible for providing all the Roles of care.

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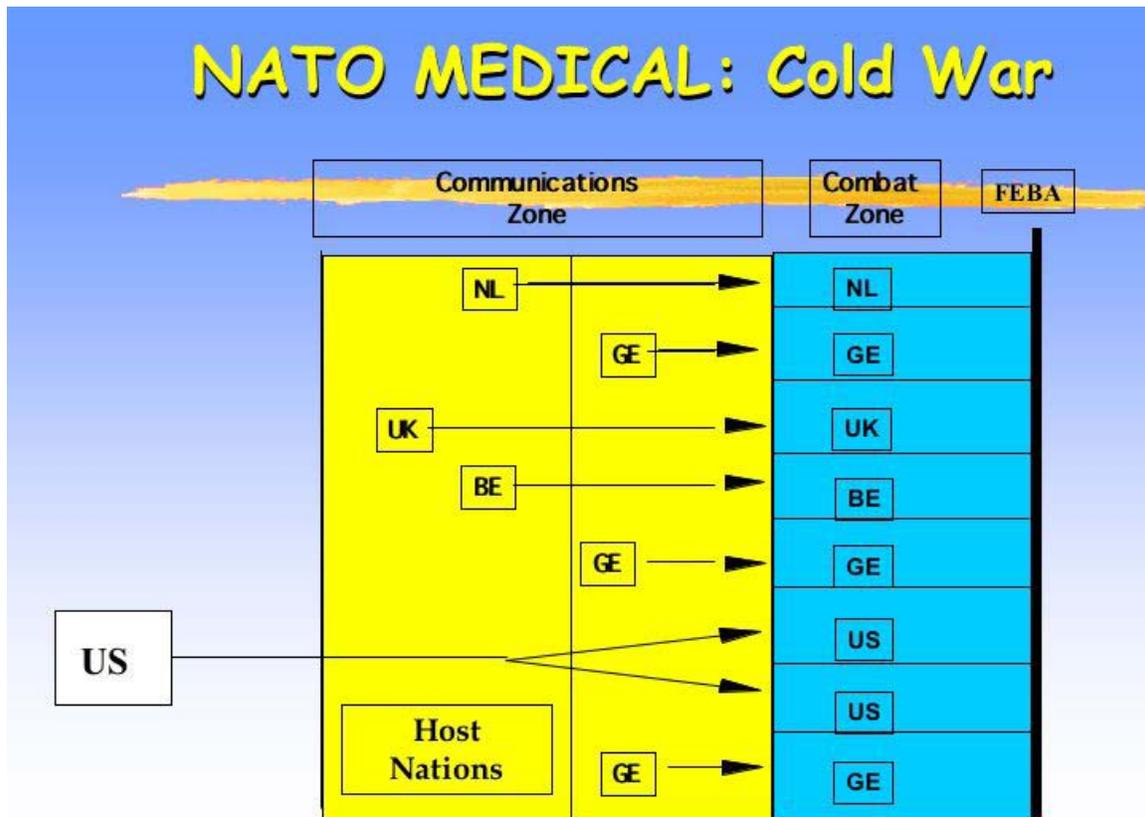


Figure 1: Generic NATO Medical Support During the Cold War

The end of the cold war, with its change in strategic focus and downsizing of national military forces, changed all that. Now, the medical support in NATO missions is seen as a joint national/Alliance responsibility, with various nations providing different services, as lead nation, role specialist, or as part of a multinational unit (Figure 2). In Kosovo, as an example, it was possible for a Kosovo Albanian to receive Role 1 medical care from a Slovenian unit, be transported in a German ambulance to a British Role 2 facility, and then flown in an American helicopter to a multinational Role 3 field hospital (Figure 3). Similar establishments and situations are occurring today in NATO operations in Afghanistan.

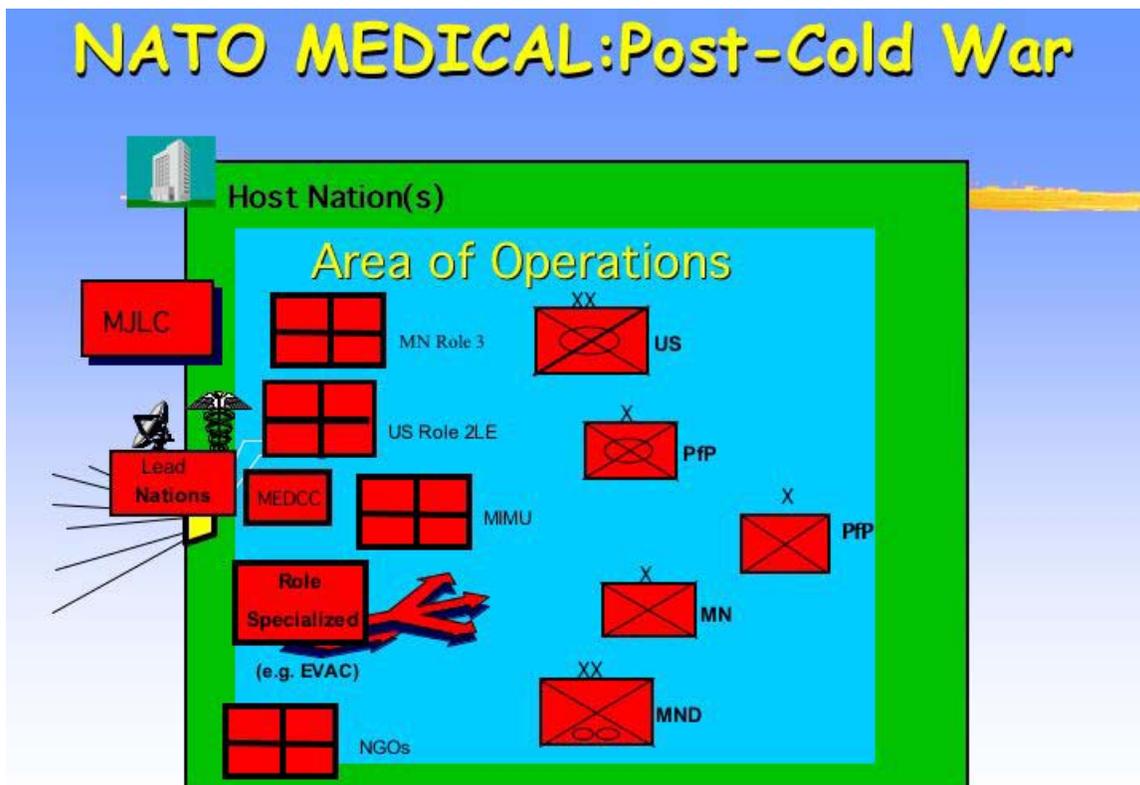


Figure 2: Generic NATO Post-Cold War Medical Support Plan (MEDCC=Medical Coordination Cell; MIMU= Multinational Integrated Medical Unit; MND= Multinational Division; MN= Multinational Unit; PfP= Partnership for Peace; MJLC= Multinational Joint Logistics Center; NGO= Non-governmental Organisations)

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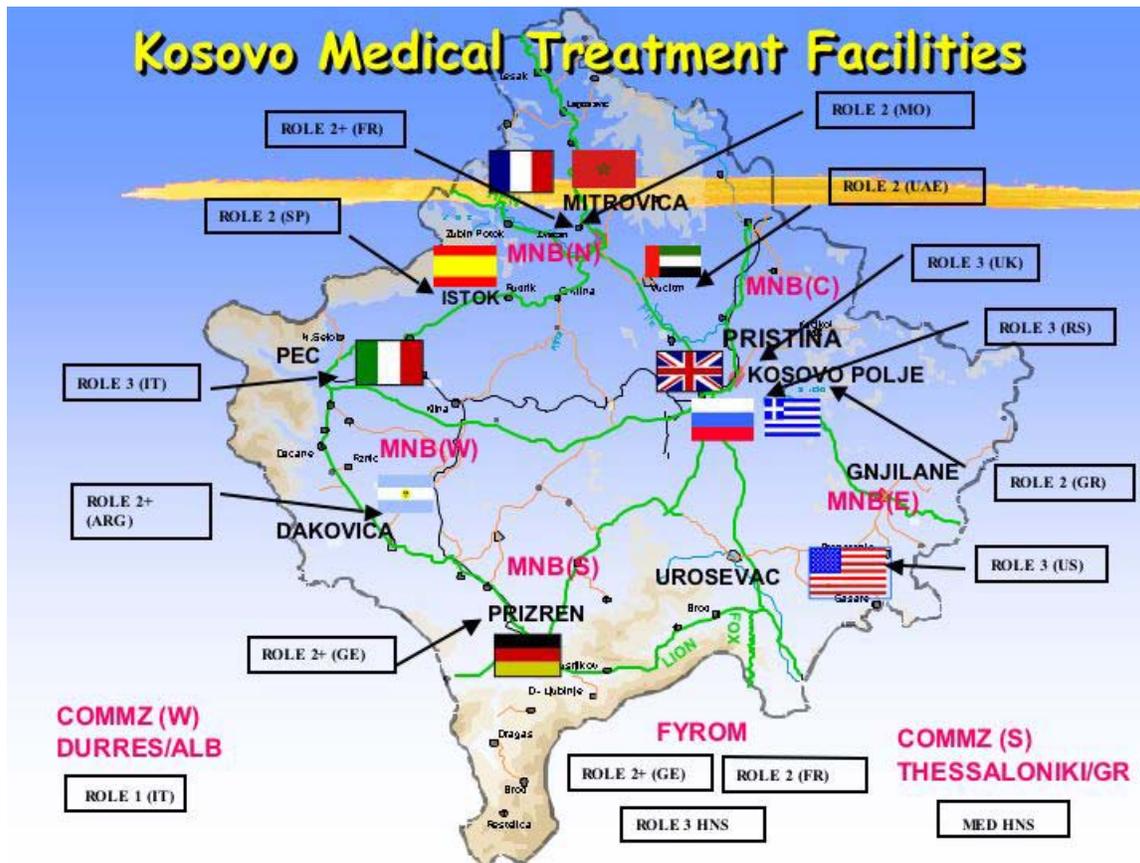


Figure 3—Kosovo Medical Support Laydown

Since multinational operations such as are currently underway in Afghanistan seem to be the wave of the future for NATO, and multinational medical support will be mandatory for provision of best care to the patients, NATO has developed an increased interest in this area, including recent interest in the provision of Teleconsultation across national boundaries. As we increasingly develop multinational medical support structures, it is vital for us all to understand both the substance and the process of NATO standardization. During this presentation, I will not spend a lot of time on the actual details of the process, but will concentrate on the conceptual basis for the need, and a generic overview of how we handle the issues.

This is for two reasons: 1) the NATO standardization process is currently in a state of rapid change, and anything I tell you today will probably be inaccurate next year; and 2) It is a very complex issue, the details and processes of which are not very important to you at this time—they will of course become important if you become personally involved in the process, and will need to learn the details in that event.

Before I get involved in the concept and process of NATO standardization in detail, I want to discuss the general principles which have guided national participation in Alliance standardization activities since the inception of NATO in 1949. First and most important, NATO standardization is entirely voluntary; no nation is forced to conform to an Alliance-wide standard for anything if it feels it is not in its interest to do so—this applies to medical standardization as well as things such as standardization of aircraft fuel or ammunition. Second, all standardization initiatives should have a clear payoff—an increase in Alliance operational

effectiveness and or efficiency. Next, while standardization is ideally achieved on an Alliance-wide basis, it is permitted among smaller groups of nations when that makes sense. Standardisation must have a benefit—it is not a goal in itself!

So, what is standardization? It is defined within NATO as “the process of developing concepts, doctrines, procedures and designs to achieve and maintain the most effective levels of compatibility, interchangeability, and commonality in the fields of operations, administration and materiel.”

As you read that definition, please note two points—First, standardization is intended to be truly comprehensive, encompassing everything—operational concepts and procedures, materiel design and specifications—that relates to the organization, equipping, operations, support, or command and control of multinational military forces. Second, standardization is a process, not an end in itself. It is best viewed in terms of the three basic levels of standardisation... Commonality, Interchangeability, and Compatibility. Basically, these are defined as....

Compatibility: "The suitability of products, processes or services for use together under specific conditions to fulfill relevant requirements without causing unacceptable interactions"—In essence, “MY SYSTEM DOES NOT INTERFERE WITH YOURS”. In terms of Medical Systems, this could be stated as “MY SYSTEM CAN BE USED ON A DESK NEXT TO YOURS, AND BOTH WILL WORK AS DESIGNED”.

Interchangeability: "The ability of one product, process or service to be used in place of another to fulfill the same requirements"—In essence, THE ABILITY TO EXCHANGE ITEMS OR PROCEDURES FOR USE WITHOUT MODIFICATION. In terms of Medical Systems, this could be stated as “IF YOUR SYSTEM BREAKS, YOU CAN USE MINE WITHOUT MAKING ANY CHANGES TO IT”.

Commonality: “The utilization of the same doctrine, procedures, or equipment”. In Medical System terms, this could be stated as “YOUR SYSTEM IS MY SYSTEM”.

What is important to remember here is that there is no one “ideal” level of standardization. NATO does not in all cases demand Commonality, when lower levels of standardization will serve the needs of the Alliance. The level desired depends on the specific object of standardization, as well as a host of broader operational, political, and economic factors. From an operational point of view, a higher degree of standardization is usually more desirable, but it is probably going to be more costly and time-consuming to attain, and it may not always be required to achieve the desired objective in terms of operational performance.

I want to reiterate my earlier comment about the very wide scope of NATO standardization. It can address issues of intangible concepts, such as doctrine, policies, procedures, and formats for military medical support. Additionally, it can deal with real medical “stuff”, such as telemedicine systems, field medical cards, stretchers, and litter mounts. A small component of this standardization covers such issues as terminology and non-military administration.

There are several modalities through which NATO standardization can take place. The most common, and most important, is a Standardisation Agreement or STANAG. This is simply an agreement among NATO nations to use like or similar equipment or procedures. But, a STANAG simply notes the nation’s agreement to standardize, and merely documents a nation’s agreement to standardize. The actual standard must usually be incorporated into national documents, specifications, or doctrine. There are now nearly 2000 STANAGs,

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not all of them medical in subject matter, though it is amazing how many of the “non-medical” ones have direct applicability to field medical support, or contain sections on medical support.

A specialized standardization document type, which is different from a STANAG, is an Allied Publication, or AP. The AP serves as a common implementing document for all nations which have agreed to accept it. In the medical arena, these include such documents as AJP-4.10, on NATO Medical Doctrine, and the entire AMED-P series on various medical subjects. Allied Publications are named in a way to identify their major area of concern, such as Allied Joint Publications (AJP) which cover joint doctrine, Allied Medical Publications (AMEDP) which cover medical doctrine, and Allied Administrative Publications (AAP) which cover general administrative information such as definitions and preparation of standardization documents. Usually, an Allied Publication will have an associated STANAG, which will simply note the nations' agreement to adopt the Allied Publication (for example, STANAG 2228 covers the adoption of AJP-4.10, which is the Alliance's primary doctrinal document on Medical Operations.)

A third document type, which is being phased out, but which you still may see occasionally, is an EXTAC, or Exercise Tactical Publication. These documents were developed as unclassified extracts of STANAGs or APs to allow release of certain standardization policies to PFP nations, without release of the entire STANAG or AP. As almost all medical STANAGS and APs are now fully releasable to the PFP nations, the EXTACs are less used than several years ago. They still exist in the areas of peacekeeping, search and rescue, and humanitarian operations. You will probably never see an EXTAC, but I mention them only in case one does come across your desk.

As I mentioned, I don't plan to discuss the actual organization and procedures for standardization in any detail, but the process is conceptually pretty simple. It is a circular reiterative process. There are six steps: proposal, validation, development, ratification, promulgation, and implementation. A nation or NATO body submits a proposal for a standardization agreement. The proposal is validated, and is then assigned to a subordinate working group or panel of technical experts. This group develops a draft document, which is revised as many times as necessary. When the draft is acceptable to the work group, it is submitted to the nations for ratification. When sufficient nations have ratified the document, it is promulgated (made effective as a NATO document). Then, as use of it demonstrates needed changes or additions, the cycle repeats. [That sounds a lot simpler than it really is in practice, but in its basic terms that is all there is to it.] (Figure 4)



Figure 4: NATO Standardisation Cycle

Recently, the organisational structure under which NATO medical standardization is accomplished has changed significantly. NATO has an entire structure of standing medical Working Groups, Panels, and Expert Teams, which have the mission of developing these documents and maintaining their currency. For example, the Telemedicine Expert Team is responsible for STANAG 2517. In the past, these groups were not coordinated, as some worked for the NATO Standardisation Agency (NSA) and others worked for COMEDS (The senior medical group within NATO, composed primarily of the National Surgeons General). In an effort to improve coordination, and to better make use of the expertise in these groups, a total reorganization has taken place. In essence, four major Work Groups (WG) have been established under COMEDS which supervise and control all the others.

These are the:

Medical Standardisation WG, which controls most medical standardization documents and supervises most of the other groups below the WG level (i.e. Panels and Expert Teams);

Military Health Care (MHC) WG, which carries out activities in standardization of clinical medicine;

Military Medical Systems, Operations, and Procedures (MMSOP) WG, which develops operational medical doctrine; and the

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NBC Medical WG, which as you would expect from its name deals with standardization of the medical response to NBC scenarios and events.

Under the supervision of these Work Groups is a whole panoply of expert panels and expert teams, including those specializing in Medical Communications and Information Systems, Medical Dentistry, Military Preventive Medicine, Medical Training, Telemedicine, Emergency Medicine, Military Psychiatry, etc., which carry out the actual work of development of the documents to be considered by the nations. More Teams and Panels can be created if there is a need for additional subject matter experts. A few panels remain, for political and operational reasons, under the service-specific boards of the NSA, such as the Aeromedical Panel and the Submarine Medicine Expert Team. Administrative support to the actual process of development, promulgation, and maintenance of standardization documents is provided by the NSA. (Figure 5)

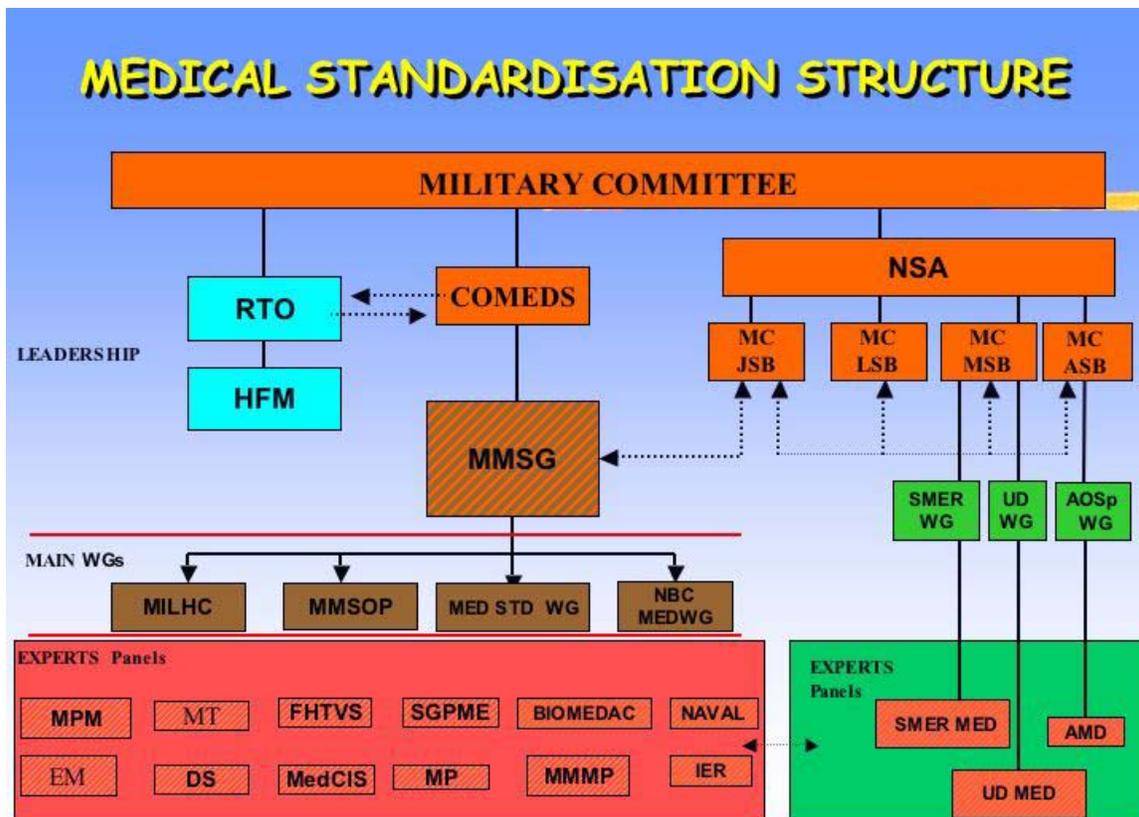


Figure 5: NATO Medical Standardisation Organisation

It is neither necessary nor proper for me to try to discuss today all the hundreds of medically-relevant STANAGs and APs. For that, I would refer you to AAP-4, which lists them all. However, Figure 6 is a table containing some of the most important ones, which are considered as vital for PFP nations to adopt. I happen to think they are the same ones which are most important for Alliance nations as well. As you read the titles of these documents, I believe you will gain an understanding of the wide-ranging nature of NATO medical standardization.

STANAG	TITLE
1412	Minimum standards for Litter to Transfer Patients Ship to Ship or Ship to Air
2037	Vaccination of NATO Forces
2040	Stretchers, Bearing Brackets, and Attachment Supports
2048	Chemical Methods of Insect and Rodent Control (Covers AMEDP-3)
2050	Statistical Classification of Diseases, Injuries, and Causes of Death
2061	Procedures for Disposition of Allied Patients by Medical Installations
2068	Emergency War Surgery Handbook
2122	Medical Training in First Aid, Basic Hygiene, and Emergency Care
2131	Multilingual Phrase Book (Covers AMEDP-5)
2132	Documentation Relative to Medical Evacuation, Treatment, and Cause of Death of Patients
2136	Minimum Standards of Water Potability in Emergency Situations
2227	Military Medical Support in Disaster Relief (Covers AMEDP-15)
2228	Allied Joint Medical Support Doctrine (Covers AJP 4.10)
2345	Evaluation and Control of Personnel Exposure to Radio Frequency Fields
2350	Morphia Dosage and Casualty Marking
2358	First Aid and Hygiene Training in NBC Operations
2361	Minimum Essential Medical Supply Items in Theatres of Operations
2409	Glossary of Medical Terms and Definitions (Covers AMedP-13)
2475, 2476, 2477	Planning Guides For Estimation of NBC Battle Casualties
2478	Medical Support in a NBC Environment
2481	Medical Information Collection and Reporting
2500	Handbook on Medical Aspects of NBC Defensive Operations (to become 2461, 2462, 2463)
2517	Development of Teleconsultation Systems
2871	First Aid Materiel for Chemical Injuries
2879	Principles of Medical Policy in Management of a Mass Casualty Situation
2931	Camouflage of the Red Cross and Red Crescent
2939	Medical Requirements for Blood, Blood Donors, and Associated Equipment
2954	Training of Medical Personnel for NBC Operations
2982	Essential Field Sanitary Requirements
3114	Aeromedical Training of Flight Personnel
3204	Aeromedical Evacuation
3318	Aeromedical Aspects of Aircraft Accident/Incident Investigation
3474	Temporary Flying Restrictions Due to Exogenous Factors
3526	Interchangeability of NATO Aircrew Medical Categories
3527	Aircrew Flying Time and Rest Periods
3744	Medical Equipment in SAR Aircraft
3745	Medical Training for SAR Personnel

Figure 6: Table of important Medical STANAGs



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Now I want to move onward to another aspect of NATO standardization—that of Information Exchange Requirements. To work together, and to ensure that we are all working toward the same ends, it is vital that true communication takes place. Communication as we normally carry it out tends to be informal and is based to a large extent on assumptions. Let me give you an example---

David, planning to attend a NATO meeting, calls John to say “I will arrive at 7 O’clock.” But, in the absence of actual complete information transfer, we may find that the necessary pick-up does not occur as planned. I have often said that within NATO there are at least three versions of English—American English, British English, and NATO English, and they are neither the same nor always mutually intelligible! Simply speaking the same language does not really ensure that adequate communication occurs.

There are three necessary things for communication to really take place: Technical Interoperability, Operational Interoperability, and Procedural Interoperability. In this case, we had Technical Interoperability, in that the phone rang and they were able to talk. We had Operational Interoperability, in that the two individuals spoke together in the same language. But, they did not have Procedural Interoperability, in that they used ambiguous terminology, and miscommunication was not only possible but likely.

The solution to this need is a fixed syntax for communication, with less likelihood for misunderstanding, and which will ensure that all necessary information is provided. For this particular incident, it could look like the following:

**OPER/NATO MEETING//
MSGID/ARRIVAL//
REF/A/MOD LONDON 23-45/021425ZSEP06//
ARRIVE/LTC/BRAUN/210600ZOCT95/LONDON/UK/HTR/LH/1234//
PICKUP/YES//**

All required information to ensure that a pickup is made appropriately is provided, in a format which both sender and receiver can understand. This is the basic principle for the IER concept. Communication must be: Concise, Accurate, Up-to-date, and Understandable. To develop such a system, we must create an artificial language with a vocabulary restricted to words which cannot be misunderstood, and we must further create structures for this language so that meaning of words can be conveyed by their position in a structure.

If we return to our previous example, we will see that this draft message is very understandable, and easy to use. This particular Message Text Format does not really exist, but we have created it simply for an example. As you can see, each entry is clearly defined and possible entries are clearly noted.

To ensure that does not occur when transmitting medical messages within NATO, we use a set of standardized medical formats, called Message Text Formats (MTFs). These require entries of certain information in a certain order, and thus provide insurance that all required information is actually exchanged, whether you are transferring a patient, requesting medical resupply, requesting an air evacuation, or reporting your medical status. It is critical that all operational medical personnel understand and use the standardized medical reporting formats within the NATO multinational environment. Developing and maintaining these formats is the responsibility of the NATO Medical Information Exchange Requirements Panel.

The currently existing MTFs are in a state of transformation, in that several service-specific documents which contain them are being consolidated. The new document will be ADATP-3, replacing such service-specific documents as APP-11 and several relevant STANAGs.

Currently existing medical MTFs include the following. I will not discuss them, but simply list them so you know they exist and you can look them up when you need to do so. They include:

- Casualty Evacuation Request
- Commander's Medical Assessment
- Evacuation Request
- Host Nation Supply Request
- Logistics Assessment Report
- Logistics Assistance Request
- Medical Casualty Reporting and Tracking
- Teleconsultation Request (Under Development)

All of this seems in concept very simple, but in many ways even the simplest task is very difficult in our multinational environment. Standardisation is necessary, but is not always simple!

I would like to make some final observations about NATO standardization. First, and most important, NATO standardization efforts have significantly improved operational compatibility of Alliance Forces in the Field. As we have moved from the Cold War force structure and moved toward multinational smaller medical forces, what was previously almost an ignored concept has become absolutely critical. The success of NATO forces which have been deployed in the Gulf War, Bosnia-Herzegovina, Kosovo, and most recently in Afghanistan, have validated the need and the past success of these efforts. Generally, in our business, it has been most successful in the areas of medical operational doctrine and procedures. We continue to develop new standardization documents which will support multinational medical operations, such as the new STANAG on Teleconsultation. I invite you to become familiar with the process and the documents, and to assist in applying these principles to your medical services.

References:

AAP-3 Procedures for the Development, Preparation, Production and the Updating of NATO Standardisation Agreements and Allied Publications

AAP-4 NATO Standardisation Agreements and Allied Publications (No longer published, but very usable as a reference if you can find an old copy)

AAP-6 NATO Glossary of Terms and Definitions

AAP-15 NATO Glossary of Abbreviations Used in NATO Documents

