NATO STANDARD

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ALLIED JOINT DOCTRINE FOR MEDICAL COMMUNICATIONS AND INFORMATION SYSTEMS

Edition B, Version 1

OCTOBER 2020

NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

29 October 2020

1. The enclosed Allied Joint Medical Publication AJMedP-5, Edition B, Version 1, ALLIED JOINT DOCTRINE FOR MEDICAL COMMUNICATIONS AND INFORMATION SYSTEMS, which has been approved by the nations in the Military Committee Medical Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2562.

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
FRA	France will be involved in monitoring by remaining a taker of all medical data standard formats. It will decide on any change in these formats on a case by case basis.
USA	A number of terms introduced in this publication do not conform to approved NATO terminology, or have been incorrectly introduced. NATO Terminology policy and guidance for use of terminology is found in AAP-03, Directive for the Production, Maintenance and Management of NATO Standardization Documents, Edition K Version 1, February 2018, paragraph 1.8.6, and PO(2015)0193 - NATO Terminology Directive. The US recognizes only NATO approved terms. This reservation will be lifted when the correct NATO terms are cited and proper procedures followed for introducing new terms.
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CHAPTER 1. PREFACE

1.1 AIM

The purpose of this AJMedP is to enable stakeholders to understand what benefits HIST can bring to Support to Operations (S2O), what capabilities are required and the medical information exchange requirements. It also provides guidance, sign-posting and documentation for nations wishing to develop national capabilities, which can be integrated into NATO forces. The NATO COMEDS Health Information Systems and Technology Working Group (HIST-WG) is the overarching authority for further information.

1.2 INTRODUCTION

Innovative technology[1] can provide new opportunities to improve both patient care and combat resilience in S2O. The concepts for HIST S2O should not be constrained by current communications, security or conceptual constraints due to the rapid technological development affecting both the opportunities and threats to security, personal cyber/ physical safety[2] and clinical patient safety. However, there is a pressing operational need to make tangible progress and these concepts must first be grounded in a realistic prioritised development list to rapidly ramp up a basic capability which can then enable effective innovation.

1.3 CONCEPT

A flexible and scalable digital eco-system to support the spectrum of operations, customisable to those operations. 'A digital ecosystem is a distributed, adaptive, open socio-technical system with properties of self-organisation, scalability and sustainability inspired from natural ecosystems'. Data utilisation must be based on a tailored risk assessment to inform the extent that data is exposed to threats versus the benefits derived for example from exposing the full electronic health record complete with demographic data to a cyber adversary. Key capabilities within the suite of HIST will facilitate the optimisation of patient regulation through the healthcare support system and increase the medical situational awareness. Operational modelling, analysis and real-time decision support will enhance MEDEVAC, Med C4I and logistic efficiencies. Disease and Non-Battle Injury (DNBI) and trauma are equally well-served by HIST in S2O

[1] The 'Adapt, Buy, Create' concept should shape any procurement and the COMEDS HIST Capability and Innovation Tool will help identify existing and new capabilities to speed development and avoid wasteful work. It is provided by the NATO COMEDS HIST Working Group, accessible through https://nso.nato.int/nso/

[2] For example, exposure of personal demographic data such as the home address in an operational theatre posing a risk to family and leverage for coercion as experienced by the Royal Welch Fusiliers personnel in Bosnia, 1995.

1.4 CONTEXT - SPECTRUM AND SCALE OF OPERATIONS[3]

Previous operations must not constrain the concept of HIST in S2O as NATO and the nations re-focus and re-orientate towards cross-spectrum operations including war-fighting. HIST capabilities must be able to conduct the full range of missions, from low- to high-intensity combat, plus missions designed to deter conflict and Humanitarian missions. Figure 1 sets out the spectrum. Scale may range from small sub-units operating independently to Corps level combined joint forces such as the NATO Response Force. Medical Operations staff equipped with appropriate medical information tools are integrated in the controlling headquarters to provide patient regulation. When considering scenarios, the war-fighting spectrum must cover over-peer, near-peer and under-peer each with distinct challenges for HIST.

Figure 1. The Spectrum of Military Operations

[3] Paraphrased from AJP 01, page 2-15 .https://assets.publishing.service.gov./government/uploads/system/uploads/attachment_data/file/602225/doctrine_nato_allied_joint_doctrine_ajp_01.pdf . See ADP Operations page 8-9 for a Summary of Military Activities.

CHAPTER 2. STANDARDS AND BENEFITS

2.1 STANDARDS

Since Health Information Systems (HIS) have a very broad field of application, both within the military and civil environment, nationally and internationally, it is necessary to agree certain standards. These standards must allow both medical information and personal medical data to be easily exchanged between various levels of healthcare providers, as well as between various command levels.
On the one hand, the use of standards must allow the quality of care offered to NATO military personnel, both in operations and exercises, to be of the highest possible standard and security level. On the other hand, these standards must also ensure that the exchange of medical information between boots-on-the-ground and staffs provides all military personnel involved at all levels with the best possible information.

2.2 BENEFITS

It is critical that the operational benefits to combat forces are demonstrated so that the resource commitments are justified, fully understood, and agreed by the controlling stakeholders. The potential benefits[4] include:

a. **Improved Clinical Decision Making and Health Outcomes.** HIST contributes to the health of service members and other entitled personnel by improving the accessibility, timelines, and/or comprehensiveness of healthcare delivery, which in turn improves health outcomes. The level and standard of medical expertise within the deployed combat space can be increased with rapid diagnosis and treatment. HIST capabilities may contribute to the generation of new knowledge via research practices (e.g. trauma registries and disease surveillance).

b. **Improved Medical Command and Control.** HIST will improve visibility of patient flow through medical treatment and evacuation capabilities within the Medical Pathway thus facilitating more efficient medical planning and better integration with wider operational decision-making[5].

c. **Improved use of resources.** An improved Medical Common Operational Picture (MEDCOP) will allow efficient and effective deployment of human resources and medical operational capability as they will be positioned optimally to reflect the population at risk and the clinical need. Healthcare providers will be deployed to ensure the optimal delivery of the medical

[4] Adapted from the US Institute for Healthcare Improvement's 'Triple Aim'.
[5] This may prevent blockages causing the closure of a Medical Treatment Facility (MTF) to new patients which in turn can create a difficult decision for the combat commander as to whether operations can continue. In Afghanistan between 2006 and 2016 combat operations were halted 5 times due to MTF being full. It should be noted this is a 'Peace Support Operation' and different decisions may be made in war fighting operations.

pathway. The healthcare practitioners will be deployed where they can better utilise their expertise and thus increase their productivity. Optimal delivery of clinical care will reduce the patient evacuation requirements, and this will lead to savings in patient time and evacuation resources. With improved use of resources, the medical and logistical footprint in the operational theatre may be reduced, without any loss in capability, and this would lead to a reduction in the associated costs.

d. **Improved experience of care.** HIST may provide care experiences which are more culturally[6]/socially effective, timely, convenient, and comprehensive.

e. **Improved military readiness.** Service members may return to duty more quickly within the theatre of operations[7] when HIST capabilities are used due to improved case tracking and management. The ability to conduct analysis by unit and formation in the Preparation phase will enable the effective and efficient deployment of personnel.

[6] For example, accommodating a gender constraint for some patient populations by providing a chaperone by VTC.
[7] A key point from the NATO Patient Tracking Workshop at the Multinational Medical Coordination Centre in Dec 18 was that once patients left the Joint Operation Area any return to combat by individuals was significantly delayed. Where appropriate retention and treatment within the JOA maintained combat capability.

CHAPTER 3. HIST WORKING GROUP

The HIST-WG consists of four teams: Support to Operations, Health Information eXploitation and eXchange (HIXX), Tele-Health, and Innovation and the Medical IER Panel

3.1 MISSION

The HIST-WG initiates and develops common principles, policies, doctrines, concepts, procedures, techniques, programmes and initiatives relevant to health information systems, technology, information security and exchange.

3.2 TASKS

a. Advises other NATO bodies on functional and technical architecture standardization for all medical communication and information systems;

b. Advises implementation of telemedicine, international Medical Data Exchange, and Personal Medical Data Exchange protection policy and standards;

c. Advises and assist ACO and ACT on all health information systems and technology;

d. Promotes interoperability of military health information systems;

e. Engages with exercise and evaluation operations involving HIST e.g., prototyping;

f. Develops health and medical data governance, oversight and exchange guidance;

g. Synchronizes research and development efforts to leverage national initiatives and identify areas of concern requiring attention.

h. Liaise with:

(1) NCIA (NATO Communications & Information Agency);
(2) IER Panels of the MC Standardization Boards;
(3) IERH WG;
(4) STO/HFM Panel;
(5) MILMED COE;
(6) ACO;

(7) ACT;
(8) Federated Mission Networking – Operational Capability WG.

3.3 MEDICAL INFORMATION EXCHANGE REQUIREMENTS (MEDIER) PANEL

MedIER Panel sits with the HIST WG, from which the panel receives administrative support. MedIER Panel`s broad tasks and responsibilities require the panel to be more independent entity in order to liaise with any subject matter expert or WG/Panel as/when needed.

The role of MedIER Panel is to:

a. Develop and promote NATO's Medical Information Exchange Requirements;

b. Liaise with NHQC3 to ensure all medical formatted messages are in correct data format and published in APP-11;

c. Advise other IER panels on non-medical IER that may have impact on medical activities;

d. Liaise, harmonize all medical IERs, and report the status of work to the IERHWG.

Note: The Information Exchange Requirements Harmonization WG (IERHWG) is established by the Military Committee Joint Standardization Board (MCJSB) to be the senior Information Exchange Requirements authority. The IERHWG is responsible for harmonization and prioritization across WG IER Panels, where joint issues or single service conflicts are involved.

3.4 SUPPORT TO DEPLOYED OPERATIONS TEAM

The role of Support to Deployed Operations Team is to:

a. Promote strategic, operational, and tactical deployed electronic health information interoperability utilizing test beds, exercises, etc.;

b. Support Federated Mission Network (FMN) integration;

c. Define international deployed health information systems doctrine and policy.

3.5 HEALTH INFORMATION, EXPLOITATION, EXCHANGE (HIXX) TEAM

The role of HIXX-T is to:

a. Support the Med IER Panel;

b. Define and promote international interoperability standards;

c. Evaluate and promote military-civilian data exchange requirements;

d. Exploit data linked to exchange in the NATO community;

e. Define and promote personal health and identifiable information standards.

3.6 TELE-HEALTH TEAM (TH-T)

The role of the TH-T is to:

a. Provide further assistance and guidance in terms of Tele-Health (Telemedicine, E-Health, Virtual Health, Digital Health, etc.);

b. Signpost areas of innovation in support of NATO or NATO-Led missions;

c. Develop and work on research topics and identify (innovative) areas of interest within the broad field of Tele-Health;

d. Map national existing capabilities, assets, and procedures (national capability matrix);

e. Encourage national development and provide guidance for nations wishing to develop national telemedicine;

f. Work toward and insist in the aim of NATO Telemedicine interoperability (VTC as minimum requirement between multinational MTFs in missions);

g. Promote relevant multinational Education, Training, Exercises and Evaluation (ETEE) activities;

h. Promote pilot testing to confirm value of programs and initiatives of interest;

i. Promote communication plans.

3.7 INNOVATIONS TEAM

The role of Innovations Team is to:

a. Establish and maintain horizon scanning matrix (e.g., mobile devices, biomonitoring, cognitive systems);

b. Promote synchronization of science and technology efforts and initiatives across Nations;

c. Identify and integrate research topics and technology

CHAPTER 4. COMMON CONSIDERATIONS

4.1 PATIENT SAFETY

HIST has the potential to impact patient safety in all phases of operations and across the Operational Patient Care Pathway (MEDICAL PATHWAY). Systems which contain personal medical data, such as Electronic Health Records (EHRs), require particular attention as they can provide opportunities to protect and improve patient safety, while also introducing risks to patient care.
While each nation will determine its own safeguards and mechanisms to ensure an appropriate program to support patient safety in their national HIS, several common challenges may be encountered, particularly with systems which contain personal medical data or with systems which need to conduct health information exchange (with other nation's HIS or with NATO systems). These challenges require additional planning consideration:

a. **Service interruptions**. Personal medical data which is only stored in electronic media may increase risks to patient care if that data is critical to clinical decision making and inaccessible by alternate means. Typical contingency planning measures, such as redundant backups and duplicate systems, may not be possible in operational environments, especially when bandwidth is scarce and may require diversion for higher priorities. With a growing reliance on electronic systems to document care, provide decision support, and enable the delivery of healthcare, comes a growing need to plan for service interruptions, including a complete denial of access to these systems, possibly for long duration. System outages, hardware or software failures, and other disruptions, require both electronic and non-electronic backup systems and procedures.

b. **Structured data and use of standards**. Although unstructured data, such as free text, will be necessary to complete some data capture tasks, systems configured preferentially for discrete data entry reduce patient safety incidents: validation rules can prevent data entry errors; clinical decision support logic can be applied to create warnings and alerts; and, when standards are used in addition to discrete data entry, information can more readily be shared across care settings and used to advance research. As patients proceed along the MEDICAL PATHWAY, they may receive care from multiple nations, or from multinational medical treatment facilities. The use of standards and structured data can promote semantic interoperability and minimize risks caused by differences in language. The data shall be usable also for epidemiological purposes and improve clinical decision making and health outcomes ("big data").

c. **Fit for purpose**. EHR workflows do not always mirror clinical workflows which can increase risk to patients. This challenge is exacerbated by the fact that many nations rely on commercial-off-the-shelf (COTS) products which were not developed specifically to address the unique requirements of the MEDICAL PATHWAY. Some products may only address the requirements of a portion of the MEDICAL PATHWAY, leading to multiple systems or hybrid systems (e.g. prehospital care documentation is completed using paper, while an EHR is employed by a Role 3 MTF) which elevates the potential for patient safety incidents caused by complex information exchange and system compatibility issues. Similarly, these products may not have been designed to operate under the constraints imposed by austere operational environments, including bandwidth restrictions.

d. **EHR risks.** Even without any challenges imposed by the provision of care in austere environments, or by the many potential care transitions along the MEDICAL PATHWAY, EHRs can impose their own risks to patient care. These risks require additional consideration in deployed environments, where consequences may be higher in the face of limited access to specialized healthcare services or host nation support. Some areas of elevated risk include:

(1) Identification. Care, treatment and medication errors can result when information is documented in the wrong record. This is often caused when care providers have multiple patient records open at the same time, or when the identifying data about a patient is not prominently displayed. In addition, there is the possibility of misidentification owing from a lack of flexibility in data configuration to support the unique identifiers of patients from other nations (e.g. national service number). Each nation has a responsibility to ensure that their own deployed system or their information management practices can safely accommodate the identification of patients of other nationalities.

(2) Status of User Actions. Users should be aware of the status of every action they take in the record. Without a means to monitor task status, any action which requires closed-loop monitoring may be at risk of incompletion: orders entered in the EHR may go unactioned; and, documents may be left unfinished. Similarly, a user should be notified upon creation of a duplicate record in order to avoid information gaps and fragmentation.

(3) Importing Content. Features which bring content into a record, such as cut and paste, may increase risk by misattributing sources, propagating errors, and retaining outdated information. While it may be efficient for the EHR user documenting care, importing content can contribute to an

overall decrease in usability if the record becomes bloated and important information less prominent to other users.

4.2 USABILITY

The effective flow of both medical information and personal medical data contributes to the achievement of the medical mission. With the increasing prevalence of electronic systems, usability has also risen in prominence as a factor which can influence the success of HIST; healthcare systems and software developers now deploy substantial resources to consider the needs of users through User Centred Design and User Experience initiatives.

Usability is defined by the International Standards Organization as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.” Usability is particularly important in multinational contexts, such as a multinational MTFs, where healthcare providers may need to acquire awareness, knowledge or ability in the use of unfamiliar HIST without benefit of extensive training. A HIST designed by one nation but shared for use of multiple nations could pose challenges, especially if the usability of the HIST was already low; potential barriers such as language, workflow, and design, would be compounded. Usability is also important in systems which contain personal medical data, such as EHRs, as poor usability can increase risks and compromise patient safety.

The Health Information and Management Systems Society (HIMSS) has described nine principles of software usability which were considered in the context of evaluating EHR systems, but can be more broadly applied to all HIST:

a. **Simplicity.** Many tasks along the MEDICAL PATHWAY require rapid action; simplicity in HIS software design supports the need for streamlined activity commensurate with the pace demanded by the medical mission. HIMSS suggests simplicity can be evaluated via these attributes: no information or visual elements are included that are not necessary to the task; important information stands out, and function options are easy to understand; the application has clear, clean, uncluttered screen design; and, functionality is limited to that which is essential to core tasks and decision making.

b. **Naturalness.** During medical operations, a lead nation may provide HIST to address some common requirements, particularly in a multinational context (e.g. the lead nation providing evacuation also provides an electronic patient tracking capability). The HIST provided for common use might have been designed to meet the unique workflow, cultural, and language needs of the nation providing it. Care should be taken to ensure the training needs of all users are met, recognizing that there may be significant variation in the user base. HIMSS suggests naturalness can be

evaluated via these attributes: the screen metaphors are familiar to everyday life, or commonly expected computer experiences for the clinician; workflows match the needs of the practice; the application appears intuitive and easy to learn; and, training will not be an overwhelming process.

c. **Consistency.** Consistency reduces the amount of training required to be effective in the use of a HIST. HIMSS describes evaluation of consistency as: all the different parts of the application have the same look and feel, consistent placement of screen elements, etc.; and, terminology and data entry fields are used consistently so that when a user understands how one screen works, it helps them understand how other screens work.

d. **Forgiveness and Feedback.** Time sensitive tasks are frequently part of the medical mission, especially those associated with the MEDICAL PATHWAY. Systems must include adequate fail safes to protect against user errors which could waste time and compromise medical operations. Possible evaluation criteria to gauge forgiveness and feedback include: it is hard to lose data or destroy time-consuming effort with a wrong click or wrong choice of buttons; if a user makes a mistake, the application helps them avoid it or the application provides a method to recover from errors gracefully (the system is “forgiving”); the system provides informative feedback to the user about actions they are about to take or have taken; and, information is provided to the user when the system is processing, indicating what is occurring and how long it might take.

e. **Effective Use of Language.** Many more languages are used in the provision of healthcare than NATO can recognize officially. Wherever possible in HIST which may be required to exchange information (with NATO systems or other nation’s HIST), standards and code sets are preferred over free text, as they help promote semantic interoperability while minimizing the risk of language translation errors. When language is used in HIST, it should be as clear as possible to all intended users. Attributes to evaluate the effective use of language include: the application uses the same words that an end user would use (while providing mapping to standardized codes and terms used for data retrieval); list or entry-form choices are clear and unambiguous; and, sentences read like natural English (or the selected language).

f. **Efficient Interactions.** Efficiency in user experience is highly important to nearly all tasks which support the medical mission, as scarcity of resources (time, human, financial, etc.) can be expected. Attributes to evaluate efficient interactions include: the application minimizes the number of steps it takes to complete tasks; appropriate defaults are always provided; the application provides navigation options such as shortcuts for use by frequent and/or experienced users; and, navigation methods minimize user

movements such as scrolling and switching between typing and mouse clicking.

g. **Effective Information Presentation.** The effective presentation of information can be culturally dependent. For example, on a scale of one to ten, some nations would default to one as the highest (best) score, while others would default to ten as the highest (best) score. Similarly with colour scales, for some nations red indicates high prevalence (and is therefore "best") while for other nations red indicates "stop" and is used to indicate a least desirable result. Consideration is required to ensure all users' needs are met via training or design, particularly for HIST which are provided by one nation for common use. Potential evaluation criteria to analyze effective information presentation include: information on screens includes sufficient white-space and large enough fonts to be read easily with high comprehension. No information should be in all upper case; and, colours are used to convey meaning (e.g. red to indicate medical urgency), not just for visual appeal.

h. **Preservation of Context.** The HIST ecosystem varies based on type of operation and participant nations, with some capabilities provided by NATO, other capabilities provided by a participant nation for common use, and yet other capabilities provided by a participant nation for exclusive national use. Those involved in delivering the medical mission may be called upon to use a variety of HIST capabilities. Although it would be challenging to preserve the context across this diverse ecosystem, it should be possible to assure that each capability or application is internally consistent with respect to context. To evaluate preservation of context, HIMSS suggests considering how well the application keeps screen changes and visual interruptions to a minimum during completion of a particular task.

i. **Minimize Cognitive Load.** Many tasks within the medical mission require significant cognitive capacity, from the delivery of healthcare to the management of activity along the MEDICAL PATHWAY; consequences of reduced cognitive capacity can be high. It is important for HIST to preserve the cognitive capacity of users wherever possible. Evaluation of this attribute could be achieved with the following considerations: information needed for a particular task or decision making is grouped together on a single screen rather than requiring the user to mentally integrate information from multiple screens in the system; alerts presented to the user are concise and informative with clear actions, and are appropriate in number; and, the application performs calculations automatically for the user so that they do not have to manually perform the calculations.

4.3 ACCOUNTABILITY

The various components or capabilities of an overarching HIST can serve different purposes. A capability which contains personal medical data may be essential to the delivery of safe and effective healthcare services, while a system which contains medical information may be essential to the sound decision making of a commander. No matter the purpose of any component or capability, accountability must be clearly assigned for functional and data management requirements, particularly those pertaining to data availability, quality, integrity, and security.

a. **Functional Requirements.** Each nation or NATO organization will maintain the functionality of its HIST in order to achieve its objectives. Several factors will require additional consideration, particularly if HIST is provided by one nation for common use:

b. **System Currency.** Updates and upgrades should be planned to ensure HIST are sufficiently current, especially those functions which may provide decision support or may rely on a knowledge base or other clinical evidence as part of their functionality. The healthcare environment is highly dynamic, with new standards evolving frequently. End users should be able to ascertain the date or version of any decision support functionality they use.

c. **Ability to override.** HIST should be designed to preserve users' individual preferences and accountability when required; decision supports and default settings should have a means for the end user to override when dictated by circumstance, national requirements or practices, their professional judgement, or the regulations governing their profession.

4.4 DATA MANAGEMENT

a. **Availability.** For a HIST to be effective, data must be available and accessible when required by users. Some systems require real-time or near real-time performance standards, which may require additional planning focus in resource-constrained environments. Users of HIST have typically included commanders (medical information), medical planners (medical information), and healthcare providers (personal medical data and/or medical information), however shifting norms regarding patient engagement have led to an expansion of this traditional user group, with some nations granting access to patients of their own personal medical data in order to achieve a greater degree of partnership. Expectations around the patient's responsibility for their own health outcomes and their degree of medical readiness for operations is variable amongst member nations. It remains a national responsibility to determine access to national systems. Access to systems which are developed by one nation for common use should be determined during the pre-deployment period.

b. **Quality.** Actions taken on the basis of faulty information can put lives at risk and compromise the medical mission. HIST must enable the capture of specific, complete, and relevant data. Data quality must be consistent across all phases of operations.

c. **Integrity.** The MEDICAL PATHWAY imposes multiple care transition points where the exchange of health information is necessary. Data accuracy and consistency must be preserved throughout the exchange process.

d. **Security.** The protection of data from either accidental or unauthorized intentional modification, destruction, or disclosure is required in HIST. Personal medical data is particularly vulnerable given the high reliance on accurate information to prevent patient safety incidents.

e. **Data Sharing.** Data Sharing will aid clinical decision making. The foundation is for the OEHR to 'red flag' any medication or health issues as well as basic information such as blood type to clinicians in emergency trauma and most of the workload for DNBI. The triage information and access to tele-mentoring and tele-consultation are also relevant. Data Sharing is enabled and/or constrained by the communications available.

f. **Data Storage and Control.** A secure data system is required[8] with a user interface using data in aggregated formats, enabling situational awareness and a MEDCOP, post-mission analysis and critical situations detection (mission replay, performance analysis and research intelligence. Data encryption may be required for security reasons but the requirement for host nation access and other exception circumstances[9] should be considered.

g. **Archiving.** All records will end in archiving and will be used by key agencies for a wide range of activities. It is often only when these activities for veteran health are initiated that the gaps in medical record keeping are retrospectively identified. Whatever system is introduced it must be able to be transferred or uploaded to the respective home nation civilian medical pathway e.g. NHS for veterans continuing care – this links to the NHS priority treatment for veterans care as laid down by government guidelines. Capturing the summary record on which clinical decisions were made alongside the treatment will provide a robust audit tool.

[8] This may be a local solution, cloud based or hybrid depending on the security risk assessment and other factors.
[9] If for example a service person is taken prisoner by an adversary who adheres to the Geneva Convention.

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CHAPTER 5. SUPPORT TO OPERATIONS (S2O) DOMAINS & CAPABILITIES DESCRIPTION

5.1 OPERATIONAL EMPLOYMENT

The capabilities will provide an enabling function for Defence Health Care both in the Firm Base and in the deployed environment'. Future operations are likely to take place in congested, cluttered, contested, connected and constrained environments where potential adversaries are likely to seek asymmetric advantage using a broad spectrum of war-fighting techniques, often simultaneously, against our forces. The variability of intensity, duration and scale of future operations will test the robustness of any Health Information System before, during and post-operation.

In addition to supporting tactical activities HIST will support the following tasks either indirectly or directly enabling both initial responders and deployed capabilities:

a. **International Defence Engagement.** There is a growing requirement for International Defence Engagement, and assets are to be prepared to deploy in both a supported and supporting role utilising novel approaches to the delivery of deployed healthcare.

b. **Non-combattant Evacuation Operations.** The are prepared to provide medical support; to the deployed force and to civilian Eligible Persons (EP). HIST capabilities will enable the registration of EP with details of location, bio-metric details and medical notes together with patient tracking.

c. **Humanitarian Assistance and Disaster Relief Operations.** Humanitarian disasters can result in large scale destruction and high death tolls, which are beyond the capabilities of the affected state(s) and require international assistance. When crises create a humanitarian emergency, humanitarian action is a crucial part of the response. The UNDAC / UNHCR will adopt an integrated approach to meet these challenges, maximising the contribution of capabilities, principally through cross government coordination from the Stabilisation Unit. HIST will enable deployment through force preparation and maintenance activities, access to policies and procedures for provision of healthcare in challenging and unusual circumstances and recording of that provision.

d. **Military Aid to Civil Authorities (MACA).** The scope of practice of military medical personnel[10] means that may not be able to bring some clinical skillsets to MACA tasks which may limit deployment. The Pre-Hospital Care

[10] This relates to their experience, for example military clinicians may be more experienced in dealing with trauma not be experienced in dealing with children or the elderly.

capability in support of MACA will normally focus on sustaining the wider Military support effort.

5.2 COMMAND

HIST will contribute to the command function in two ways:

a. **Maintenance of Health.** Whilst the health of the unit is the responsibility of the Chain of Command, the provision of the highest possible standard of assured healthcare is the responsibility of healthcare commanders in the network. HIST will enable rapid and agile health information exploitation.

b. **Manage the Operational Patient Care Pathway (OPCP, aka MEDICAL PATHWAY).** HIST will enable command understanding of the situation along the length of the Medical Pathway and thus improve decision making effectiveness, command, control and flow in both the Firm Base and deployed environments to maintain the health of the force.

5.3 INFORM[11]

HIST will contribute to the inform function by:

a. **Medical Information.** Facilitated by HIST the widespread presence enables the collection of timely and effective Medical Information which 'serves several essential purposes, especially at the strategic and operational levels of planning. It is important to the intelligence and operational staffs in the conduct of strategic assessments and to the medical planning, preventive medicine and operations staffs[12]'.

b. **Health Surveillance.** Health surveillance (including disease surveillance) contributes to the inform function through the collation, analysis and exploitation of information regarding the detection of outbreaks of ill-health, the monitoring of medical force protection measures and medical deployability trends. Different users will require different degrees of timeliness; some will require near-real time access to data[13], whilst for others time will not be a critical issue. HIST capabilities will underpin Force Health Protection (FHP), thus enabling a Joint Force's freedom to operate in spite of the presence of hazards and threats, by contributing to the:

[11] Decision Superiority through shared situational awareness within task-orientated communities of interest that exploit collaborative processes in a single information domain.
[12] NATO AJP-4.10 - Medical Support Doctrine.
[13] For some users such as the Deployed Health Surveillance Centre this data will then be analysed, fed back into the MEDCOP and may be viewed by other users as analysed data.

(1) Timely identification of threats from the enemy (e.g. Chemical, Biological, Radiological and Nuclear), terrain, climate, endemic disease, environmental and industrial hazards, and occupational hazards.

(2) Identification of preventive and controlling FHP measures, including immunisation and prophylaxis measures and recording their implementation.

(3) Recording of exposure to hazards of the living environment (e.g. air, water, food, and accommodation), epidemiological and other technical statistics and information.

c. **Support on Operations.** Whilst primarily configured to meet the requirements of the Allied military Population at Risk (PAR) on operations, Health Information Systems are also required to meet the health needs of a number of other patient groups within the wider PAR. Whilst these are not specified capacity driving tasks per se, the provision of healthcare to these groups represents non-discretionary activity that the information capability should be capable of supporting. These groups include:

(1) **Entitled nationals.** On operations, the military may be required to provide healthcare to personnel of partners across government[14], contractors on deployed operations and/or, more rarely, other nationals.

(2) **Captured Personnel (CPERS).** The nations have a legal responsibility to provide healthcare to all CPERS detained by the military.

(3) **Civilian population.** Operating in a congested and contested environment will inevitably bring the military into contact with the full range of the civilian demography including NEO EPs. The information capability must be prepared to support:

(a) **Acute care.** Under the Law of Armed Conflict, the nations have a legal responsibility to provide PHEC to civilians who are sick or injured because of armed conflict. This responsibility is absolute where injury is a directly attributable to NATO or coalition action; however, determining responsibility is often impossible in the immediate aftermath of an incident and the priority for healthcare providers will be administering PHEC, irrespective of cause. This will include emergencies which are outside the scope of normal military practice e.g. paediatrics, obstetrics and geriatrics.

(b) **Routine care.** In exceptional circumstances, such as the immediate aftermath of a conflict before the Host Nation (HN) and / or Non-

[14] Other Government Departments etc.

Governmental Organisation response can be mobilised, the military may be temporarily required to provide PHC to civilians.

(4) **Host Nation Security Forces (HNSF).** There may be a tactical and moral imperative for personnel to provide care for HNSF in the short term.

(5) **Interpreters.** Due to their close proximity of working with a deployed force, local interpreters may be at risk when accessing their own, indigenous healthcare services. Once a local interpreter is treated within the MEDICAL PATHWAY, there will be many moral, ethical, and force protection factors that will push to keep the patient within the MEDICAL PATHWAY. Equally, there may be differences between local and cultural health beliefs that may contribute to tensions in differing healthcare expectations.

(6) **Other Entitled Personnel.** This covers entitled groups not covered above when operating across the spectrum of operations where entitlement may be adjusted. This would include groups such as aid workers, VIPs etc.

5.4 NATO AND ALLIED INTEROPERABILITY

HIST must be interoperable with the NATO MEDICS system and coalition partners.

a. **Personal Data.** A key principle of the NATO MEDICS capability document is that ‘confidentiality will be ensured by tracking patients with ID numbers that are anonymous for NATO’.

b. **Responsive Sharing.** Another key issue that will need to be addressed is whether access will be on an individual basis (i.e. Cpl X is injured and being treated by a German Medical Treatment Facility and thus we share the summary record for Cpl X) or whether there will be open access to all PAR records, which was the solution for primary care in Afghanistan. The extent of data availability is likely to be constrained by the national medical privacy regulations, the IT solution, connectivity and fall-back options if connectivity does not exist or fails whether due to enemy activity or technical issues. The COMEDS HIST-WG position is that data should be held by the nation and transmitted only when required. Summary care records could also be held on the individual in electronic form as happens in other national military and civilian domains.

5.5 KEY USER REQUIREMENTS / CAPABILITIES

The elements required for HIST in S2O are:

a. Clinical Support

(1) Improved visibility of patients along the MEDICAL PATHWAY including within MTF.

(2) Operational Health Record Management and Exchange both nationally and with NATO allies.

(3) Tele-Health support. A central organisation system with support for tele-mentoring and tele-consultation.

(4) Medical Treatment Facility Med IS eco-system.

b. **Mission Decision Support.**

(1) Patient Flow[15]

(a) Patient Tracking.

(b) Patient Regulating[16].

(2) Medical Reporting.

(3) Medical Planning

(4) Medical Intelligence.

c. Health Surveillance.

(1) Trauma Registry (STANAG 6516).

(2) Health Surveillance.

(3) EpiNATO.

(4) Force Health Status.

(5) Veterans Health Status.

[15] 'Patient flow management (formally called patient regulation) is the active process of directing, controlling and coordinating the transfer of patients within and out of a JOA throughout the continuum of care. Thereby facilitating the most effective use of medical treatment and evacuation resources; and ensuring that the patient receives the right treatment in a timely manner and at an appropriate facility'

[16] Patient Regulating is the movement of patients and the regulation of patients through the MEDICAL PATHWAY. There is no agreed NATO Term, nor definition in Doctrine.

5.6 OPERATIONAL HEALTH RECORD MANAGEMENT AND EXCHANGE

Improved Patient Visibility within the Patient Pathway. The most empowering[17] use of HIST, increasing the effectiveness of the MTF, is for the Emergency Department (ED) of MTF being able to understand[18] incoming patients and understand on-going medical incidents across the JOA. This allows the ED consultant to align the medical resources such as blood, medicines and specialist equipment to treat specific patients. More importantly it enables them to brief their staff on what to expect and how often extremely badly wounded patients are to be dealt with. This settles the clinical team, enabling them to deal with the situation better. This is particularly important when dealing with multiple casualties. Having knowledge of the patients basic medical details such as blood type, allergies and any current treatment may remove the need for further testing by the ED prior to treatment. The capture of all clinical data into the Trauma Registry in as high quality as possible will improve patient outcomes and drive medical innovation. The immediate access to digital x-ray and other images cuts the time required for clinical decisions and stops staff running around the MTF searching for physical records.

a. **Electronic Health Record.** The threshold requirements are:

(1) **Operational Electronic Health Record (OEHR).** The NATO Field Medical Card (FMC) is the agreed standard format which must be central to any data handling and flow within the system. Data from the main military health record in the fixed setting must be available. This should reflect the NATO FMC fields for selected demographics and medical information such as immunisations and deployability status. A more compact OEHR will aid transmission over limited and prioritised communication channels. Where security and communications are more robust in the medium/ large maritime assets and fixed overseas bases then the security assessment might allow the full fixed health record to be used.

(2) **Essential Data Only.** As a default position the minimum essential medical data should be placed in geographic or virtual areas which may be exposed to a heightened threat from adversaries[19] who seek to capture that data whether physically[20] or by cyber-attack. Following a full Information Risk Assessment[21] a decision can be made whether to

17 BG Tim Hodgetts, UK 19 Dec 18

18 For example, in AFG the ED had two screens which showed on-going incidents in the JOA, alerted the ED of incoming patients and enabled communication with the MERT so the ED Consultant could provide tele-mentoring to the MERT Team dealing with complex casualties. The ED consultant could also advise the Medical Operations Cell (PECC) which casualties should be sent where – a skillset to compliment those of the Medical Support Officers in the PECC. JCHAT provided the best communications in a high tempo environment coupled with the ability to directly communicate with the MERT Team.

19 Military, criminal, commercial or other.

20 For example, if the Medical Treatment Facility is captured in a war fighting scenario.

21 How much standard information is required must be balanced against privacy, Caldicott, GDPR and security considerations. The number of times that information would be required not included in the OEHR together with the accessibility of the full Health Record from the home country using reach-back are factors.

deploy an OEHR or by exception a full record if the security of the location and the clinical benefits gained merits such a risk.

(3) **Exchangeable Health Records.** The capability must be capable of selecting and making available individual and/ or group OEHR and an Electronic Treatment Record in accordance with NATO format standards and recommendations[22]. The record(s) can then be communicated to other MTFs along the care pathway and back to the Firm Base.

(4) **Availability.** The OEHR must be available where it is required. It must be available at Role 1, 2, 3 and 4. It should be available to first responders. It must work alongside the ETR element for when the patients are outside the military, for example a NATO service person or a civilian in a humanitarian operation.

(a) The OEHR should be available at the point of care, to improve the speed of clinical response and clinical outcome. It should be available to a doctor in a medical treatment facility, a first responder in a tactical setting, a medical technician in a remote outpost, within the evacuation chain or in an Allied, civilian or other setting.

(b) The receiving MTF should have a digital feed from the evacuation asset to enable the specialists to advise on treatment and the prioritisation/ routing of patients. It enables the MTF to prepare resources and staff.

(5) **Relevance.** It must be up to date when personnel deploy, with all the pre-deployment checks and immunisations captured in the OEHR.

(6) **Identification.** The ability to recognise patients is essential. Traditionally dog-tags are carried with service numbers and these are now being enhanced with embedded electronic tags or secure USB sticks which can carry other information including medical and treatment records[23]. A unique method of identification and tracking through the patient care pathway is required. This will require the use of an Enterprise Master Patient Index (EMPI) especially in a multi-national context. The EMPI will be used to link patient identifiers (e.g. service number and operational identifier), thus allowing a patient's information together into a single view/record, and to send the correct identifier when looking to interact with other nations. Any deployed logistics Movement and Tracking module may need to interact as it will mirror aspects of the personnel systems found in the fixed space.

[22] The NATO COMEDS Med IER Panel will promulgate a proposed amendment to STANAG 2563 in Jan 19.
[23] For example, the German experimental system which can also hold additional data such as MRI scans and has a local transmission capability within 10 metres, so data can be pulled to a medic's tablet device even before they enter an incident scene.

b. **Electronic Treatment Record (ETR)**

A method for capturing data must be constructed which works empathetically with the clinicians. This may be prior to the recording of a casualty's clinical history until a NATO Field Medical Record can be created and shared via the Theatre Patient Evacuation Coordination Centre (PECC)[24] or directly to an MTF. It should have the ability to record and transmit a record of treatment and accompanying artefacts such as CT scans through the pathway back to the Firm Base if necessary.

(1) **ETR Template.** It is important that the ETR can be used whether or not the patient identity is known.

(2) **End to End Data Collection[25].** The ETR is created and updated as the patient passes through the Medical Pathway. The ETR must be available at the same location as the patient in the pathway which may require robust communication and a fall-back method[26].

(3) **Data Entry.** A rapid and systematic process of data entry will reduce the margin for clinical error. Data entry might be machine aided, by novel input methods which could include AI, voice input, remote human input or other innovative methods.

5.7 TELE-HEALTH

For the purposes of this document, the term "Tele-Health" is used as defined by STANAG 2517 (AMed P 5.3 (Development and implementation of Telemedicine systems). Tele-Health applications allow high level medical support with a smaller and more capable medical footprint in theatre. Tele-Health and telemedicine use advanced medical and communication technologies which enable healthcare providers to get expertise to where it is needed without the need to move the experts. Tele-Health (and telemedicine) is useful in the preparatory phase, the immediate operation (deployment), the stabilizing response, and the long-term response including the post deployment phase. Its impact is of value in any type of operation and gives value from the point of injury to the MTF. HIST must be able to support Tele-Health and telemedicine. A Tele-Health Team is established within the HIST Working Group to provide further assistance

[24] See the NATO LOF FS MEDICS ETR Requirement document for an explanation of the benefits of using existing NATO technical security measures. The holding of a central NATO sponsored ETR has now been discarded as an option to national privacy concerns raised by the NATO COMEDS HISTWG in 2018.
[25] NATO Med CIS Workshop 17 Oct 17.
[26] This could be paper and/or an electronic storage device such as RFID or USB stick (see the German and Italian capabilities for both).

5.8 MEDICAL DECISION SUPPORT

a. **The Combat Environment.** The MEDICAL PATHWAY is highly dynamic and complex with the Primary Care pathway intertwined throughout. Movement along the pathway is influenced by clinical factors (the number, type, and severity of injury/illness patients), tactical factors (such as the mission, threat, environment, and force dispersion), and the available capability and capacity of the healthcare system.

b. A contested environment significantly adds to the complexity of the pathway, and in an increasingly congested and contested operating environment the movement of patients will ultimately be under the control of the battlespace owner, based on the appropriate clinical advice. As the complexity of the patient pathway increases, so too will the complexity of clinical decision-making. Figure 2 shows an example of the medical laydown on operations[27].

c. **Trauma versus Disease and Non-Battle Injury.** The provision of HIST must consider that DNBI forms most the routine workload for medical capabilities in support to operations. It is also the principle loss of combat manpower. Record keeping is therefore essential as is access to a patients recent and relevant previous history. Most DNBI if treated does not result in permanent loss of combat power. The workload associated with battlefield-trauma is smaller but vital for individual medical outcomes and wider issues such as force morale and consent.

d. **Medical Command, Control, Computers, Communications and information (Med C4i).** There is a requirement to provide Clinical and Command Decision Support along the Patient Care Pathways facilitated by a consistent MEDCOP. The effective passage of clinical information is enabled by NATO standards to avoid miscommunication and delay in Medical Evacuation.

(1) **Patient Tracking.** This should track patient flow through medical treatment and evacuation capabilities from first responder through Role 1, Role 2 to Role 3[28] and beyond. It should operate in real-time or near real time.

(2) **Patient Regulation.** The Regulation of patients must include the ability to understand demand on MTFs and the movement within and inflow and outflow from MTFs.

[27] This graphic is from AJP4.10(B).
[28] MedC4i has been identified by the COMEDS MMSOP WG as one of the seven core modules for a Role 3 MTF. AJP4.10(C) P1-35
https://assets.publishing.service.gov./government/uploads/system/uploads/attachment_data/file/457142/20150824-AJP_4_10_med_spt_.pdf

(3) **Patient Evacuation Control Cell (PECC).** Notification of incidents and the control of patient flow is exercised by PECCs at tactical, operational and strategic levels. The tracking and decision support tools should enable the PECC to understand the triage status of patients and arrange appropriate evacuation with Movement and Transport staff. Communication will cross the turbulent tactical to operational and operational to strategic boundaries.

e. **Interoperability**. The forces will operate within their own single services, jointly and within a Combined multi-national formation. Medical capability could expect to have gaps in some niche capabilities for which it would rely on other partners to provide. Clinical timelines may differ for other Nations. Medical codes also differ across NATO allies with most using SNOMED, enabled by HIST capabilities thus enhancing interoperability with NATO allies. A standard summary record and ETR format must be agreed through the NATO Standardisation process.

f. **Automation and Artificial Intelligence.** The automation of procedures and the use of current and future Artificial Intelligence will enable better command and control particularly in Mass Casualty situation whether in combat or on humanitarian missions.

g. **Medical Devices.** The use of devices will enhance the clinical decision-making process and potentially affect evacuation options.

h. **Emergency Department Information Screen.** The availability of evacuation information on digital screens in the Emergency Department enhances the ability of the department to align resources to incoming casualties and for specialist staff within the department to influence evacuation decisions by the Medical Operations staff/ PECC.

5.9 HEALTH SURVEILLANCE

The requirement is for automatic surveillance from the HIST for early detection of a range of issues: detection of Chemical, Biological, Radiation and Nuclear incidents as well as outbreaks to DNBI. Health surveillance provides overall medical situational awareness and contributes significantly to Force Health Protection. The aim is achieved by conducting continuous and systematic collection, analysis, interpretation and dissemination of health-related data with respect to deployed NATO forces by HIST. Therefore HIST must be able to support Health surveillance.

Syndromic Health Surveillance is the continuous monitoring of current incidence of disease symptom complexes that may result from a deliberate release of a biological warfare agent or a naturally occurring disease. It aims to detect unusual high aggregates of signs and symptoms in certain locations or units to provide early warning of the outbreak of diseases and implement actions to prevent and control diseases.

EPI NATO is another surveillance system, besides syndromic surveillance and laboratory based data, during missions and therefore serves as source of the medical surveillance information. Disease surveillance is part of Health surveillance. Health surveillance contributes to Force health protection. With such systems in place, tracking of disease trends will be possible in a timely enough manner to allow proactive measures when required. MilMed COE Deployment Health Surveillance center (DHSC) is the key player in comprehensive Health Surveillance. Medical CI regarding health surveillance follows the user operational requirements for NATO Health Surveillance capabilities. All national and NATO health surveillance systems shall support the data management and transfer described by AMedP-21, STANAG 2277, 2535. All contributing nations and NATO should be capable of storing relevant health surveillance data on a (national) system that is interoperable with NATO and among the nations

Occupational and Environmental Health (OEH). There can be a significant time delay between an exposure to an occupational or environmental hazard and the manifestation of illness or injury. Care must be taken in the pre-deployment phase to support a longitudinal approach to data collection and analysis. Data models and architecture should be designed to facilitate coherence between medical information systems (e.g. population-based surveillance systems), systems collecting personal medical data (e.g. electronic health records), and post-service information systems (e.g. veteran or civilian health information systems; disability award decision systems). Research needs should also be anticipated in the design of systems collecting or analyzing OEH data. Data should be structured to facilitate investigations of association between clinical outcomes and exposures, at both individual and population levels.

In the pre-deployment phase it is important to plan an appropriate information sharing model. While disease, injury and exposure surveillance is typically conducted on a national basis and then integrated at higher levels (e.g. EpiNATO reports), following the organizational structure in place for the force, sampling data (e.g. soil, air, water, etc.) is relevant on a geographic basis. Though sampling data may be collected by one nation, it may be applicable to all nations with forces in that area, or in proximity. An information sharing model should anticipate the possibility that nations collecting data may be able to share it with others.

In the pre-deployment phase, planning should take place to ensure data models and architecture can support the linkage between exposure data which may be held in medical information systems, and clinical outcomes which are often recorded as personal medical data in Electronic Health Records (EHRs). Many EHRs, particularly those that are purchased from civilian vendors, do not include data fields to discretely capture the occupational and environmental exposures which may be found in the course of military service and operations. Data which is captured as free text, or embedded within a clinical history, may be challenging to utilize for further investigation or research. A longitudinal approach to data collection and analysis is needed, since there can be a significant time delay between an exposure to an occupational or environmental hazard and the manifestation of illness or injury. This longitudinal

approach should also take into account the possibility that relevant data (e.g. soil, air, water sample data) is collected by other nations.

5.10 VETERANS HEALTH

Information exchange with post-service health organizations must be anticipated as part of the HIST design process. This exchange can include the provision of healthcare services, research, and decisions to support disability claims or awards. During the reconstitution phase, data management practices should include a verification that personal medical data created during earlier operational phases is complete, especially for patients who may have received care in the MTFs of other nations, or in multinational care settings. Without a comprehensive record of illness, injury, and/or treatment received, military members may have difficulty accessing veterans' health services or proving a claim of disability. Archiving of personal medical data from a military HIST should not preclude access by authorized post-service health organizations or civilian systems.

CHAPTER 6. TERMS & REFERENCES

6.1 TERMS

ACO	Allied Command Operations
ACT	Allied Command Transformation
C3	Command, Control and Communication
C4I	Command, Control, Communication, Computer and Informations
CDC	Centre for Disease Control
CFAB	COMEDS Future Advisory Board
COP	Common Operational Picture
CRO	Crisis Response Operations
DSS	Disease Surveillance System
DNBI	Diseased and Non-Battle Injuries
EHR	Electronic Health Record
HIMSS	Health Information and Management System Society
HIST	Health Information Systems and Technology
HN	Host Nation
HNSF	Host Nation Security Forces
HQ	HeadQuarter
JFC	Joint Forces Command
JOC	Joint Operations Centre
MedCOP	Medical Common Operational Picture
MG	Ministerial Guidance
MIMS	Medical Information Management System
MOU	Memoranda Of Understanding
MTFs	Medical Treatment Facilities
NAIRN	NATO Asset Tracking Information Routing Network
NCIA	NATO Communication and Information Agency
NCSA	NATO Communications and Information Systems Services Agency
NDPP	NATO Defence Planning Process
NHS	National Health Services (UK)
NRF	NATO Response Force
NSE	National Support Element
NTR	NATO Trauma Registry
OEH	Occupational Environmental Hazard
OPCP	Operational Patient Care Pathway
PECC	Patient Evacuation Coordination Centre
PfP	Partnership for Peace
PTS	Patient Tracking System
S2O	Support To Operations
SOR	Statement Of Requirement
TCN	Troop-Contributing-Nations

TOA	Transfer of Authority
UNDAC	UN Disaster Assessment and Coordination
UNHCR	UN High Commissioner for Refugees
WHO	World Health Organization

6.2 REFERENCES

NATO Principles and Policies of Medical Support (MC 326/3)

NDPP - NATO Defence Planning Process

AJP-01 – Allied Joint Doctrine

AJP-6 – Allied Joint Doctrine for Communication and Information Systems

STANAG 2228 (AJP-4.10 EDC V1 (September 2019)) - *Allied Joint Doctrine for Medical Support*

STANAG 2231 (AMedP-5.1 EDA V2 (May 2018)) – *Patient Data Exchange Format for Common Core Information*

STANAG 2517 (AMedP-5.3 EDA V1 (November 2018)) – *Development and Implementation of Telemedicine Systems*

STANAG 5525 (Edition 1) – *Joint Consultation, Command and Control Information Exchange Data Model*

STANAG 2535 (AMedP-4.1 EDA V2 (January 2017)) - *Deployment Health Surveillance*

STANAG 2542 (AJMedP-1 EDA (September 2018)) - *Allied Joint Medical Planning Doctrine*

STANAG 2543 (AMedP-5.2 EDA V1 (August 2018)) – *Standards for Data Interchange Between Health Information Systems.*

STANAG 6516 (AMedP-8.16 EDA V1 (August 2019)) – *NATO Trauma Registry*

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