

NATO STANDARD

AMedP-4.1

**DEPLOYMENT HEALTH
SURVEILLANCE**

Edition A Version 2

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NORTH ATLANTIC TREATY ORGANIZATION

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NATO LETTER OF PROMULGATION

19 January 2017

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Edvardas MAŽEIKIS
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CONVENTIONS

1. Throughout this AP, wherever prescriptive language is used, it is to be interpreted as follows:
 - a. “Shall” indicates the application of a procedure or specification is mandatory.
 - b. “Should” indicates the application of a procedure or specification is recommended.
 - c. “May” and “need not” indicate the application of a procedure or specification is optional.
 - d. “Will” indicates future time. It never indicates any degree of requirement for application of a procedure or specification.
2. The term “Outbreak” is used and in the context of deployment health surveillance means the occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season¹.
3. The following abbreviations are used listed in the order they appear:
 - a. MC – Military Committee
 - b. MILMED COE – NATO Centre of Excellence for Military Medicine
 - c. DHSC – Deployment Health Surveillance Capability branch of the MILMED COE
 - d. MEDICS – Medical Information and Coordination System
 - e. FHP – Force health protection
 - f. IO, NGO – International organisation, non-governmental organisation
 - g. HN – Host Nation
 - h. MTF – Medical Treatment Facility
 - i. TOO – Theatre of Operations
 - j. MEDDIR, MEDAD – Medical Director, Medical Advisor
 - k. SOP – Standing Operating Procedure

¹ In the context of deployment health surveillance, the World Health Organisation definition of this term shall apply

- l. ACO – Allied Command Operations
- m. NCS – NATO Command Structure
- n. SRD – Standards Related Document
- o. AP – Allied Publication
- p. SNOMED-CT – Systematized Nomenclature of Medicine - Clinical Terms
- q. ICD – International Classification of Disease (version 10)
- r. OPSEC – Operational Security
- s. PAR – Population at Risk
- t. RDOIT – Rapidly Deployable Outbreak Investigation Team

Chapter 1 - INTRODUCTION

1.1 PURPOSE

1. The aim of this document is to articulate NATO deployment health surveillance doctrine and policy, taking account of developments in the field of military preventive medicine and epidemiology, since publication of AMedP-21 Edition 1, under cover of STANAG 2535 in October 2010. It also takes account of the ongoing developments in NATO systems including the MEDICS component of LogFS.

2. This document is a revision of AMedP-4.1, Edition A, Version 1, which it replaces. The numbering viz. AMedP-4.1, reflects the fact that This document provides NATO deployment health surveillance (supporting) doctrine in relation to AJMedP-4 Force Health Protection (which in turn supports the NATO medical keystone doctrine: AJP-4.10 Allied Joint Doctrine For Medical Support.

1.2 CUSTODIANSHIP

The COMEDS FHP WG has responsibility for STANAG 2535 and AMedP-4.1, complying with NATO Military Committee (MC) Medical Standardisation Board requirements. The custodian is the NATO Centre of Excellence for Military Medicine (MILMED COE), Deployment Health Surveillance Capability (DHSC) Branch².

1.3 SCOPE

This document primarily focuses on health surveillance applied to NATO deployments, i.e. monitoring of health status, detecting public health trends or exceptional events (as natural or intentional outbreaks or unexpected diseases cases), providing health status information, feedback and alerts to NATO. This document has to be understood as NATO doctrine regarding deployment health surveillance.

1.4 STRUCTURE

1. AMedP-4.1 is structured with a main body and a series of annexes to provide greater coherence and also simplify the production of future versions and editions.

2. In addition, the structure of the document accommodates improvements in the design and application of EpiNATO which have been achieved since publication of AMedP-21.

² Custodianship of AMedP-4.1 by the DHSC Branch of NATO MILMED COE was agreed by the MCMedStdWG in Jan 2012 and reaffirmed at the FHPWG in March 2016.

- a. EpiNATO 'is a NATO sponsored morbidity surveillance system which is a keystone tool to be managed by the medical staffs of deployed forces at all levels, involving the monitoring, collection and evaluation of illness/injury data on deployed personnel who report for medical treatment support, both on an outpatient and inpatient basis'³.
 - b. Public Health surveillance using EpiNATO-2 is therefore fully described at ANNEX A - , which will enable the production of operational and tactical guidance as needed.
3. Monitoring the occurrence of notifiable disease events remains important and is now fully described in ANNEX B - .
 4. In this edition, we also introduce the approach to syndromic surveillance within NATO. The realisation of this capability is dependent upon the delivery of NATO's Medical Information and Coordination System (MEDICS) and complementary individual national systems and the principles are presented in ANNEX C - .

³ AMedP-13(A) NATO Glossary of Medical Terms and Definitions (English). May 2011.

Chapter 2 - FEATURES OF DEPLOYMENT HEALTH SURVEILLANCE

2.1 DEPLOYMENT HEALTH SURVEILLANCE

2.1.1 DEFINITION

Deployment health surveillance is ‘the continuous, systematic collection, analysis, and interpretation of health-related data and dissemination of findings’ with respect to deployed NATO forces⁴.

2.2 THE OBJECTIVES OF DEPLOYMENT HEALTH SURVEILLANCE

1. Detect, as soon as possible, occurrences of public health incidents or outbreaks, natural or not, that may jeopardize NATO capabilities and missions.
2. Assess the public health burden of death, diseases, injuries, syndromes or consequences of exposure to environmental or occupational risk factors in terms of limiting operational capabilities and for which preventive or counter-measures could be applied.
3. Identify under which circumstances some of these diseases occur.
4. Evaluate implemented preventive measures and public health programs and policies.
5. Identify relevant medical research fields.

2.3 FORCE HEALTH PROTECTION

2.3.1 DEFINITION

Force Health Protection (FHP) is defined as ‘the sum of all the efforts to reduce or eliminate the incidence of disease and non-battle injuries to enhance operational health readiness and combat effectiveness’⁵.

2.3.2 RELATIONSHIP WITH DEPLOYMENT HEALTH SURVEILLANCE

Deployment Health Surveillance is a fundamental component within the overall concept of Force Health Protection (FHP) and is intrinsic to obtaining a clear picture of force health status and enabling NATO to adopt appropriate measures.

⁴ Adapted from NATO FHP WG proposed definition and ONTC comment

⁵ AJP-3.14 Allied Joint Doctrine for Force Protection.

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<p style="text-align: center;">Chapter 3 - INTERFACES WITH NATO DOCTRINE ON MEDICAL INTELLIGENCE, MEDICAL INFORMATION AND PRE- AND POST-DEPLOYMENT HEALTH ASSESSMENTS</p>
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3.1 MEDICAL INTELLIGENCE AND MEDICAL INFORMATION

1. Deployment health surveillance is dependent upon medical information and medical intelligence (the doctrine for which is contained within AMedP-3.2 and AJMedP-3 respectively)⁶ to provide the baseline risks that need to be surveyed routinely during a given mission.

3. The relevant capabilities within NATO can take account of deployment health surveillance findings in order to determine whether the force has sustained a deliberate biological attack.

4. Notwithstanding, natural causes are the most likely explanation for unexpected deployment health surveillance findings and it is important for responders to receive timely information, in order to mount an effective response.

3.2 HEALTH STATUS OF NATO MILITARY PERSONNEL BEFORE AND AFTER NATO DEPLOYMENTS

1. The health status of NATO military personnel before and after NATO deployments is a national responsibility.

2. NATO Deployment Health Surveillance does not collect individually identifiable information. Therefore, it is not a substitute for operational medical records which are the means to ensure the continuity of care of individual personnel.

3.3 PRE- AND POST-DEPLOYMENT HEALTH ASSESSMENTS

This is articulated in STANAG 2235/AMedP-4.8. Pre- and Post- Deployment Health Assessments, which was promulgated.

⁶ AMedP-3.2 Medical Information Collection and Reporting and AJMedP-3 Allied Joint Doctrine for Medical Intelligence.

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Chapter 4 - ROLES AND RESPONSIBILITIES

4.1 MEDICAL TREATMENT FACILITIES

1. Each medical treatment facility (MTF) deployed within a theatre of operations (TOO) that treats NATO command forces personnel as in- or outpatients shall report data into the NATO deployment health surveillance systems.
2. According to the health surveillance tool that is being used, Role 1, 2 or 3 MTFs may be involved. All reporting MTFs shall receive feedback relevant to their report.

4.2 NATO OPERATIONAL CHAIN OF COMMAND

1. The Medical Director (MEDDIR), who may also be the Medical Advisor (MEDAD) for the TOO, is responsible for report system management, this is usually achieved through their subordinate staff, e.g. the preventive medicine staff officer or non-commissioned officer who shall ensure that deployment health surveillance is achieved according to policy. This requires ensuring that:
 - a. Standing operating procedures (SOP) reflect the requirements for health surveillance.
 - b. Reporting deadlines are met.
 - c. All data received from MTFs are transmitted up the chain of command in a uniform format and are not corrupted i.e. data not modified or aggregated.
 - d. Feedback is sent to the reporting MTFs in order to inform local action, sustain motivation and continuously improve quality of data provision.
 - e. Feedback is passed up the medical chain of command and ultimately to NATO strategic command.
2. When analysis of deployment health surveillance information indicates there is a public health incident or possible communicable disease outbreak, coordination of the field management would normally take place at the operational chain of command, even if the management of public health events remains a national responsibility.

4.3 NATO STRATEGIC COMMAND

1. Allied Command Operations (ACO) is the oversight for deployment health surveillance and is ultimate recipient of the deployment health surveillance data and analysis.
2. ACO will specify deployment health surveillance requirements, with SOPs generated at the operational level.

4.4 NATO CENTRE OF EXCELLENCE FOR MILITARY MEDICINE DEPLOYMENT HEALTH SURVEILLANCE CAPABILITY BRANCH

4.4.1 NATO CENTRE OF EXCELLENCE FOR MILITARY MEDICINE (MILMED COE)

The MILMED COE is an international military organisation with the core task to facilitate interoperability between the military medical services in NATO. It was accredited in 2009 and is located in Budapest, Hungary.

4.4.2 DEPLOYMENT HEALTH SURVEILLANCE CAPABILITY (DHSC)

1. The DHSC is located in Munich, Germany. Since 2011, the DHSC has been a branch of the MILMED COE.

2. The mission of the DHSC is to contribute to the efforts of the military medical services in NATO to achieve health surveillance and enhance force health protection of deployed NATO forces.

4.4.3 KEY ROLES OF THE DHSC

1. Leading revision of the key NATO doctrine on deployment health surveillance through custodianship of STANAG 2535 / AMedP-21 (now AMedP-4.1).

2. Modernisation and improvement of the existing NATO deployment health surveillance tools and related systems.

3. Collaborative development/application of other deployment health surveillance tools in order to cover the full spectrum of NATO needs in public health and CBRN issues. Near to real-time surveillance is an example of the application of a new tool in development.

4. Direct support to the NATO operational chain of command in current TOO by:

a. Collection and analysis of data reported using the implemented tools.

b. Dissemination of the results of analysis to the NATO Command Structure (NCS) through the MEDDIR and MEDAD, reporting MTFs and national points of contact (mandated by the NCS). This will include highlighting anomalous findings.

c. Provision of recommendations about the management of public health events.

5. Achieving maximal key exchange of data, analysis, and feedback, using the lowest security classification that can be justified, whilst maintaining operations security (OPSEC).

6. Facilitating health surveillance in practice by maintaining templates for SOPs and reporting formats.

7. The DHSC therefore aims to build a comprehensive health surveillance capability for NATO congruent with NATO MEDICS.

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Chapter 5 - KEY PROCESSES, TERMINOLOGY AND SUPPORTING ACTIVITY

5.1 KEY PROCESSES

The World Health Organisation identifies a number of functions that are found within an effective health surveillance system. Within the context of NATO deployment health surveillance, they can be summarised into six steps:

5.1.1 RECORDING OF HEALTH EVENTS

The medical record is the single most important source of information for deployment health surveillance. The information within these records is sensitive and confidential; therefore, an intermediate step to anonymise and summarise information held in the medical record is needed. Only the anonymous information is transmitted for the purpose of health surveillance.

5.1.2 DECLARATION OF ACTIVITY

At the end of the reporting period, each MTF should summarise their clinical activity into the prescribed report and submit this as described in the SOP for their TOO. Usually these reports are submitted to the MEDDIR/MEDAD.

5.1.3 COLLECTION OF REPORTS

1. Depending on the scale of the operation, there may be a number of levels in the hierarchy of reporting (such as Regional Commands) before reports from all MTFs has been collected. Each level should take steps to validate the reports they receive before passing it to the next level in the reporting hierarchy. Local SOPs may dictate aggregation of reports for in theatre analysis; however, the report as declared by MTFs shall also be passed on unaltered.

2. The final stage in the collection of data is the transmission of the data submitted by MTFs from the MEDDIR/MEDAD for the TOO to the DHSC.

5.1.4 CONSOLIDATION OF PERTINENT INFORMATION

Pertinent and relevant information should be gathered to contextualise the analysis of the reports collected from a given TOO. This can include information about the health status of host nation population, environmental conditions and other threats to health.

5.1.5 ANALYSIS AND PREPARATION OF FEEDBACK

1. Commanders at all tiers of the chain of command are likely to want interpretation of deployment health surveillance reports. The aim of analysis is to identify whether further action is required and may involve the use of statistical methods. These methods establish whether the number of reported cases is higher than that which was expected.

2. The results of the analysis should be routinely published in the form of feedback that includes the findings of analysis and any recommendations for further investigation or potential courses of action. Further technical issues relating to analysis and feedback are detailed in ANNEX D - .

5.1.6 DISSEMINATION OF FEEDBACK

1. Feedback of information to the MTFs that provided the data for surveillance is essential. This should be done in a timely manner in order to maintain motivation to contribute to the surveillance system.

2. Findings and recommendations from the analysis also need to be reviewed by the MEDDIR/MEDAD for the TOO and fed forward to military commanders in theatre and the higher command for the operation.

5.2 KEY TERMINOLOGY

5.2.1 DENOMINATOR

1. For the purpose of NATO Deployment Health Surveillance, the TOO denominator comprises all personnel belonging to NATO command forces in that particular TOO and is used to calculate rates of events of interest. It excludes civilians such as NATO civilians, diplomatic personnel, dependents, personnel from International or Non-Government Organizations and host nation (HN) civilians.

3. Each MTF, irrespective of their actual role, should maintain awareness of the NATO command forces for whom they are responsible for providing primary care (Role 1). This is known as the MTF Denominator; however, establishing this number can be problematic and additional detailed guidance is provided in ANNEX D - .

5.2.2 NUMERATOR

1. The numerator is the number above the line in the fraction that describes the rate of an event of interest. Deployment health surveillance events of interest include clinical signs and symptoms, syndromes, diseases, injuries, risk factors, health logistical data or any other health-related data. ACO will decide which health surveillance tool(s) shall be implemented in each TOO under the responsibility of the respective MEDDIR/MEDAD.

2. Events of interest detected in the NATO command forces within a particular TOO are the primary focus of deployment health surveillance. Therefore, events of interest occurring in this group shall be reported separately from events occurring among other people who have received care. Doing this should avoid any skewing the rates of events for the NATO command force.

3. Health events detected in NATO command force personnel should be reported by the first MTF that treats them. This approach should be followed even if the MTF is not the one with principal responsibility for primary care for that individual.

5.3 KEY SUPPORTING ACTIVITY

5.3.1 DEPLOYMENT HEALTH SURVEILLANCE TRAINING

The responsibility for training personnel who are to conduct deployment health surveillance activities is a national one. However the NATO MILMED COE and the French Military Centre for Epidemiology and Public Health (CESPA) collaboratively organise and deliver specific NATO deployment health surveillance training.

5.3.2 EVALUATION AND QUALITY MANAGEMENT

Nations are responsible for meeting the deployment health surveillance requirements mandated by ACO and should strive to maintain high quality at all times. The DHSC may provide an audit function if tasked by ACO to undertake this activity.

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ANNEX A - EPINATO-2 ILLNESS AND INJURY SURVEILLANCE

A.1 INTRODUCTION

1. The purpose of the EpiNATO-2 surveillance system is to detect disease and injury cases, clusters or outbreaks that might limit mission effectiveness, to follow trends in healthcare activity and to assess public health policy and programs.
2. EpiNATO-2 has two facets:
 - a. Reporting against a list of selected relevant diseases or injuries. They are selected on the basis of their importance as public health issues and potential impact on operational effectiveness.
 - b. Reporting of other activity within MTFs to assess the general burden of illness and injury and associated demand for healthcare. This information may also be of value for medical planning purposes.
3. The EpiNATO-2 surveillance system is a Force Health Protection (FHP) tool. Deployed health care providers at all levels are responsible for diseases and injuries medical surveillance reporting.
4. Each MTF must log sick call visits and report them using a standard (EpiNATO-2) format to the MEDDIR. This shall be done in accordance with specific distribution instructions that are specified in the SOP.
5. Emergency requests for assistance for outbreak investigation and disease control teams should be in accordance with the established command and control system and theatre SOP.

A.2 THE REPORTING PERIOD

EpiNATO-2 data should be collected daily and normally submitted weekly. The reporting period is specified by the MEDDIR / MEDAD and has to be the same for all MTFs e.g. from Monday 00:00 to Sunday 23:59, with the weekly report being sent on Monday morning. This is normally synchronised with other report timelines as set by the operation commander.

A.3 COMPONENTS OF THE EPINATO-2 SURVEILLANCE SYSTEM

1. At the end of each reporting week, each MTF shall generate an EpiNATO-2 report.
2. The EpiNATO-2 report consists of six components:

- I MTF Identification:
- Location (eg. base, ship, formation, town)
 - MTF Name
 - Nationality (if more than one, report lead nation first) using letter codes as per STANAG 1059
 - E-Mail address
 - Telephone number
 - Name and NATO rank of responsible medical officer
 - Name and NATO rank of person completing the report
- II Report date and calendar week that the report covers (ISO 8601 format).
- III MTF denominator - number of personnel for whom the MTF was principally responsible for providing primary care during the reporting period.
- IV Total number of consultations during the reporting period
- V a Event codes, their respective descriptions and number of first encounters in an episode of care for specified illness and injuries seen during the reporting period.
- V b Event codes, their respective descriptions and number of first encounters in an episode of care that is not already counted in V a,
- VI Comments

3. Components V a and V b above are described in detail below. The task of completing the EpiNATO-2 report may be delegated to administrative personnel; however, clinicians have an important role to assign cases to the correct event code or ensure sufficient information is recorded in the notes so that it can be done at a later date.

4. Nations that have implemented electronic health records may be able to prepare EpiNATO-2 reports automatically and this is an approach that nations are encouraged to adopt if technically feasible. There are two broad options open to nations with electronic health records wishing to automate illness and injury reporting:

- a. **Surveillance Report Template.** This approach guides providers to record the EpiNATO-2 event code during the consultation within a dedicated field of the medical record. This could be part of a template for recording symptoms and signs for syndromic surveillance.

b. **Electronic Health Record Query.** The electronic health record is searched to provide summaries of the number of cases seen that match the criteria based on diagnosis or signs and symptoms recorded. This has the advantage that clinicians don't have to complete a separate surveillance template; however, it is dependent on clinicians using a structured and codified method to record information. In addition, the clinician would need to comprehensively record all symptoms and signs observed and a diagnosis. Failure to adhere to these principles will result in poor quality data for surveillance.

4. MEDICS will include a manual data entry capability that providers can use to declare their illness and injury reports. This will be based on option A above.

A.4 DEFINITIONS

TOTAL NUMBER OF CONSULTATIONS

Component IV is a type of numerator as described in section 5.2.2. This serial is used to report all patient encounters at the MTF during the reporting period, including first and follow-up attendances.

NUMBER OF NEW CASES BY EVENT

1. Components V a and V b includes serials that are all numerators as described in section 5.2.2 that classify all first encounters in an episode of care:

a. Where the reason for encounter or health problems identified fits one of the specific illness and injury definitions described in Table A-1 the case shall be reported against the respective event code.

b. Where the reason for encounter or health problems identified doesn't fit any of the specific definitions described in Table A-1 the case shall be classified into one of the other illness and injury activity definitions described in Table A-2 and reported against the respective event code.

2. Under normal circumstances, each first encounter in an episode of care should be reported against the one event code that relates to the most likely or working clinical diagnosis.

3. Personnel that present with more than one reason for encounter or are found to have multiple health problems should be reported against each relevant event code.

4. Nations may be able to automatically extract the data required for the EpiNATO-2 report from their electronic health record systems. To facilitate this, DHSC will maintain a SRD detailing the SNOMED-CT terms that map to the EpiNATO-2 event codes. Tools exist to translate these terms further into whichever coding or terminology system the nation uses (such as ICD-10).

Event code	Description	Definition
Alpha	Gastrointestinal Infection	All diagnosis consistent with upper or lower gastrointestinal infection or food poisoning being the underlying cause.
Bravo	Respiratory tract and ENT infections without pulmonary or systemic complications	Symptoms and signs of uncomplicated acute respiratory tract infections including those affecting the ear, nose and throat but without any associated severe systemic effects.
Charlie	Asthma or reactive airways symptoms or signs	Asthma or allergen or irritant induced cough wheeze or shortness of breath.
Delta	Flu symptoms and pneumonia	Symptoms and signs consistent with respiratory tract infections such as Influenza, MERS-CoV, SARS, Legionnaires disease, Q fever, Tularemia and pneumonic plague.
Echo	Non-specific febrile illness	Presentation with febrile illness where no other obvious cause is apparent. Includes suspected septicaemia, parasitemia and viremia where the causative organism is not yet known.
Foxtrot	Systemic haemorrhagic illness	Acute systemic illness with haemorrhagic manifestations, with or without fever. This includes petechiae, ecchymosis/bruising, bleeding gums, epistaxis, hematemesis, melena and meno/metrorrhagia.
Golf	Musculoskeletal disorders	Cases of chronic musculoskeletal disease or where there has been a delay between the putative incident and first presentation with musculoskeletal symptoms.

Table A-1. EpiNATO-2 specific illness and injury events (Part 1 of 3)

Event code	Description	Definition
Hotel	Acute neurological symptoms or signs	Acute CNS disorders such as meningitis, encephalitis, or encephalopathy, and symptoms and signs such as meningism and delirium.
India	Mental health symptoms or signs	Symptoms and signs where disturbance of mental health is considered the likely cause. This includes changes to of sleep patterns, mood, appetite, and behaviour or anxiety, acute stress, self-harm, substance misuse and depression.
Juliet	Dermatological disorders	Disorders of skin, subcutaneous tissues, hair and nail including allergic reactions, infections and infestations but excluding traumatic injuries or psychosomatic problems.
Kilo	Sexual exposure	Any presentation following unprotected sexual intercourse or where there was failure of protection.
Lima	Dental disorders	Disorders of the teeth, or periodontal, gingival and oral soft tissues, salivary glands, mandible or maxilla.
Mike	Bites and stings	Bites or stings by any animal or insect but not by another human.
November	Battle Injuries	Presentation with physical injuries obviously sustained during battle.
Oscar	Non-Battle Injuries	Presentation with physical injuries not associated with battle.
Papa	Reserved	This event is reserved for future development
Quebec	Disorders caused by climate or altitude.	Disorders caused by exposure to heat, cold, altitude or sunlight.

Table A-1. EpiNATO-2 specific illness and injury events (Part 2 of 3)

Event code	Description	Definition
Romeo	Reserved for definition by MEDDIR/MEDAD	The theatre Medical Advisor might wish to use event Romeo for specific operational purposes with the agreement of the Chain of Command, which may seek epidemiological advice from the DHSC on the matter.
Sierra	Reserved for definition by nations	Nations might wish to use event Sierra for nation specific purposes, which may seek epidemiological advice from the DHSC on the matter.

Table A-1. EpiNATO-2 specific illness and injury events (Part 3 of 3)

Event code	Description	Definition
Tango	Urgent surgical condition not elsewhere classified	Any urgent presentation where the symptoms and signs suggest a diagnosis requiring referral to a surgeon that is not classified elsewhere.
Uniform	Urgent medical condition not elsewhere classified	Any urgent presentation where the symptoms and signs suggest a medical cause that is not classified elsewhere.
Victor	Routine clinical care	First encounter in an episode of non-urgent clinical care such as management of long term conditions, planned dental care, re-issue of medication and diagnostic tests.
Whiskey	Preventive care	First encounter in an episode of preventive care such as immunisations, routine physical examinations, dental inspections.

Table A-2. EpiNATO-2 other illness and injury/healthcare activity events (Part 1 of 1)

A.5 EPINATO-2 analysis strategy

The NATO medical Chain of Command will assign responsibility for analysis of EpiNATO-2 data within the medical cell at each tier of command. The intention is to promote reporting and data usage at all Command levels. EpiNATO-2 data should be analysed routinely and periodically (at least weekly). Analysis of data implies the responsibility to report concerns and provide situational awareness to each appropriate command level, including the appropriate subordinate commands. Following analysis, feedback should be given to data providers.

A.6 CLASSIFICATION LEVEL

The EpiNATO-2 report has to be classified as low as possible, in order to facilitate transmission through the medical chain. The Operational MEDDIR in coordination with the Chain of Command will determine the classification level liaising with data providers.

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<p>ANNEX B - NOTIFIABLE INFECTIOUS DISEASES AND EVENTS</p>

B.1 INTRODUCTION

Health surveillance for NATO deployments also includes the monitoring of notifiable infectious diseases and events where there is supporting biological evidence. The intent is to provide the Theatre/Operational JMED Chief or their equivalent with a high level summary of detected cases. However, it does not substitute nation specific notifiable diseases reporting mechanisms and these shall be completed.

B.2 REPORTING PERIOD

1. The notifiable infectious diseases and events reporting should be collected and reported in parallel with the weekly EpiNATO-2 clinical diagnosis surveillance data described in Annex A and should be submitted at the same time.
2. Known public health incidents or clusters that represent a potentially significant public health threat, especially if they require immediate investigation and action (medical and/or military counter-measures), must be reported immediately to the operational MEDDIR / MEDAD through any appropriate means (emails, phone call, Medical Incident Report). The reporting of such events must not be delayed until the weekly EpiNATO-2 reporting.

B.3 REPORTING REQUIREMENTS

1. Experience has shown that these types of events are likely to be reported by Role 1 MTFs very rarely. Therefore, each report is significant in its own right and acts as a failsafe mechanism to prompt confirmation that any necessary public health actions have been done.
2. MTFs shall submit an exception report whenever they diagnose a probable or confirmed case of any of the conditions listed in tables B-1 to B-9. In addition, MTFs should report other instances where they have submitted a notifiable infectious disease/event report through their national reporting chain.
3. A probable case is one where the case meets the clinical case definition for the disease and there is supportive or presumptive laboratory results that are consistent with the diagnosis.
4. A confirmed case is one where there is either a confirmatory laboratory test or epidemiological link. An epidemiological link exists when the following conditions are met
 - a) There has been contact with a confirmed case or exposure to a point source of the infection.

b) Transmission of the disease causing pathogen by the usual modes of transmission is plausible.

5. The reporting of notifiable diseases to the Theatre/Operational JMED Chief or their equivalent does not replace the national notifiable diseases reporting mechanisms or national thresholds for reporting for acute public health action which continues to remain a national responsibility.

Disease	ICD-10 Code
Smallpox	B03
Poliomyelitis due to wild-type poliovirus	A80.1, A80.2
Influenza caused by a new sub-type	J11
Severe acute respiratory syndrome	U04

Table B-1. Unusual or unexpected notifiable diseases that may have serious public health impact (WHO International Health Regulations 2005)

Disease	ICD-10 Code
Cholera	A00
Plague	A20
Yellow fever	A95
Ebola, Lassa or Marburg viral haemorrhagic fevers	A96.2, A98.3, A98.4
West Nile virus infection	A92.3

Table B-2. Diseases that have demonstrated the ability to cause serious public health impact and to spread rapidly internationally (WHO International Health Regulations 2005)

Disease	ICD-10 Code
Diphtheria	A36
Measles	B05, A81.1
Mumps	B26
Rubella	B06
Whooping cough	A37
Tetanus	A35

Table B-3. Standard vaccine preventable diseases (AMedP-23)

Disease	ICD-10 Code
Hepatitis A	B15
Hepatitis B	B16
Japanese encephalitis	A83.0
Meningococcal infection	A39
Rabies	A82
Tick-borne encephalitis	A84
Typhoid fever	A01.0
Varicella	B01

Table B-4. Other vaccine preventable diseases (AMedP-23)

Disease	ICD-10 Code
Amoebiasis	A06
Botulism	A05.1
Brucellosis	A23, M49.1
Campylobacteriosis	A04.5
Cryptosporidiosis	A07.2
Giardiasis	A07.1
Enterotoxigenic Escherichia coli infection	A04.1
Legionellosis	A48.1, A48.2
Listeriosis	A32
Paratyphoid fever	A01.1-A01.4
Salmonellosis	A02
Shigellosis	A03
Trichinellosis	B75

Table B-5. Food and waterborne diseases

Disease	ICD-10 Code
Malaria	B50-B53
Leishmaniasis	B55
Dengue fever	A97
Chikungunya	A92.0
Relapsing fever	A68
Rickettsioses (spotted fever, and typhus)	A75-A77, A79
Lyme disease	A69.2
Venezuelan equine fever	A92.2

Table B-6. Vector borne diseases

Disease	ICD-10 Code
Anthrax	A22
Crimean Congo haemorrhagic fever	A98.0
Q fever	A78
Rift Valley fever	A92.4
Leptospirosis	A27
Tularaemia	A21

Table B-7. Zoonosis

Disease	ICD-10 Code
Infection with <i>S. aureus</i> that is resistant to methicillin	U80.00
Infection with human immunodeficiency virus (HIV)	B20-B24, R75, Z21
Infectious mononucleosis	B27
Influenza caused by an existing subtype	J09-10
Leprosy	A30
Scarlet fever	A38
Sexually transmitted diseases (excl. HIV infection)	A51-A64
Streptococcal A sepsis or infection (excl. Scarlet fever)	A40.0, B95.0
Tuberculosis	A15-A19

Table B-8. Other diseases and events

ANNEX C - NATO SYNDROMIC SURVEILLANCE

C.1 INTRODUCTION

1. The goal of syndromic surveillance within NATO is to enable earliest possible warning of the emergence of the outbreak of disease that requires public health action. This is achieved by monitoring the incidence of combinations of symptoms and signs instead of clinical signs. This approach is believed to be highly sensitive (i.e. it detects all true outbreaks) but can be prone to false alarms.
2. The raw data is collected for purposes other than surveillance. This type of information is usually part of the contemporaneous medical record. Where possible, systems should be in place to automatically generate surveillance reports so as not to impose an additional burden on data providers.
3. Although syndromic surveillance can be used to monitor a wide range of diseases, the main focus of this type of surveillance within NATO is to detect potential outbreaks of infectious disease. Used in conjunction with intelligence, it provides the means by which a potential deliberate biological attack can be detected.
4. The development of the surveillance modules within NATO MEDICS is the key enabler for syndromic surveillance for the Alliance. Similarly, the development of electronic health records is the key enabler for individual nations to participate. The aim of this chapter is to define the minimum interoperable standards to which nations should aspire.

C.2 REPORTING PERIOD

In order to achieve the goal of providing early warning of potential outbreaks, syndromic surveillance data should be reported as close to real time as is tactically practicable. Therefore, syndromic surveillance data will be reported following each patient encounter.

C.3 DENOMINATOR

MTFs that submit EpiNATO-2 reports are not required to submit their denominator with each syndromic surveillance report as there will already be a figure that can be used. Where EpiNATO-2 surveillance is not in use, MTFs shall submit a reasonably accurate MTF denominator once per week.

C.4 REPORTING REQUIREMENTS

1. Following each patient encounter, MTFs are to submit a syndromic surveillance report that is made up of the following elements:

- I MTF Identification:
 - Location (eg. Camp, Ship, Town)
 - MTF Name
 - Nationality (if more than one, report lead nation first) using letter codes as per STANAG 1059
 - E-Mail address
 - Telephone number
 - Name and NATO rank of responsible medical officer
 - Name and NATO rank of person completing the report
- II Date and time of patient encounter (ISO 8601 format)
- III Hash code identifier
- IV Symptoms and signs

2. Nations that have implemented electronic health records may be able to report encounters automatically and this is an approach that nations are encouraged to adopt if technically feasible. There are two broad options open to nations with electronic health records wishing to automate syndromic reporting:

a. **Surveillance Report Template.** This approach guides providers to record the relevant signs and symptoms during the consultation by providing a checklist. This has the advantage that more of the surveyed signs and symptoms identified during the consultation are recorded. Ideally, this should facilitate the provider to assign an EpiNATO-2 event code as well.

b. **Electronic Health Record Query.** The electronic health record is searched to and a report is generated for each encounter detailing the relevant symptoms and signs that were recorded. This has the advantage that clinicians don't have to complete a separate surveillance template; however, it is dependent on clinicians using a structured and codified method to record information. In addition, the note would need to comprehensively record all symptoms and signs observed. Failure to adhere to these principles will result in poor quality data for surveillance.

3. MEDICS will include a manual data entry capability that providers can use to input patient encounter data. This will be a surveillance report template that includes symptoms and signs as well as EpiNATO-2 event code reporting.

C.5 DEFINITIONS

HASH CODE IDENTIFIER

1. In order to protect privacy, syndromic surveillance reports must not contain any medical protected data⁷. Notwithstanding, it is important that each encounter is linked to a person so that duplicate entries can be detected and sequential attendances by an individual can be tracked.

2. Within NATO syndromic surveillance, encounters will be linked to the relevant patient using a unique secure hash code. The hash code is generated by a mathematical algorithm that takes a string of text that can be of variable length and converts it into a hexadecimal code that is of fixed length. The following medical protected data shall be used to construct the hash code:

- Rank
- First name
- Middle names
- Surname
- Gender
- Date of Birth
- Nationality
- Mission

2. The codes bear no resemblance to the original data and it is not feasible to reconstruct the medical protected data from them. These methods are used for user authentication procedures for activities such as online banking where it would be undesirable to send passwords in clear format.

3. The method used by individual nations to create their hash identifiers is a national responsibility. This includes the order in which information about the individual is passed to the algorithm and the algorithm used. However, the resulting hash digest shall be 256 bits long.

SYMPTOMS AND SIGNS

1. Symptoms are the features of illness that patients describe during a consultation and are sometimes referred to as the subjective part of clinical assessment. Clinicians

⁷ Medical information which allows identification of the patient involved, and which must be precluded from unauthorised access in order to protect and preserve patient privacy.

can observe or elicit signs when they speak with or examine the patient; these are sometimes referred to as the objective part of clinical assessment.

2. Syndromes are defined by using logical operators (such as “and”, “or”, “not” or “exclusive or”) to connect several symptoms and signs. Unlike a clinical diagnosis, the clinician is only making a judgement about the presence or absence or quantity of a particular sign or symptom.

3. Experience has shown that syndromic surveillance can detect an emerging outbreak of disease earlier than illness and injury surveillance; however, this comes at the price of false alarms. This means that syndromic surveillance can indicate that an outbreak is happening even though, in reality, there isn't one. Therefore, syndromic surveillance is a tool that can only be used to assist in supporting decisions.

4. Comprehensive syndromic surveillance requires extensive information within the health record to be coded and transmitted for analysis. This may not be technically feasible for all nations; therefore, the minimum report following an encounter shall include a statement about whether the patient complained of or at the consultation was found to have:

- a. Fever/chills,
- b. Sore throat,
- c. Headache,
- d. Aches and pains,
- e. Diarrhoea,
- f. Vomiting,
- g. Skin signs,
- h. Cough,
- i. Excessive sweating,
- j. Tired, weakness,
- k. Dyspnoea,
- l. Abnormal neurological signs,
- m. Psychiatric signs,
- n. Lymph node abnormalities,
- o. Glasgow Coma Score,

p. Abnormal bleeding,

5. In practice, there are a multitude of terms used in health records that elaborate upon the above list. To facilitate query based automated extraction from national systems and to provide more detailed definitions for the above terms, DHSC will prepare an accompanying SRD to this AP. The SRD details the SNOMED-CT concepts that map to each of the symptoms or signs.

6. The SRD also lists the comprehensive list of symptoms signs that describes the aspiration for NATO health surveillance. Nations should consider this list when developing their electronic health records.

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ANNEX D - TECHNICAL ISSUES

D.1 INTRODUCTION

The aim of this Annex is to provide additional technical guidance in relation to the key processes and components of deployment health surveillance.

D.2 DENOMINATOR

1. The rate of an event of interest can be described using a fraction. The number below the line in such a fraction is known as the “denominator”. The denominator is essential to enabling analysis of surveillance data in order to determine whether the number of events observed in a given week or location is in need of additional investigation.

2. The TOO denominator can be subdivided according to geographical location, base or formation. The current approach employed by NATO is to group personnel based upon the MTF with principal responsibility for providing those personnel with primary healthcare. Other geographies are defined by aggregating MTFs.

D.2 MTF DENOMINATOR

1. The share of the TOO denominator for which each MTF is responsible should be clearly defined, with support from the MEDDIR as necessary, in order to allow precise analysis so that emerging issues can be localised. This is especially true where more than one MTF is collocated in a base and steps should be taken, involving the MEDDIR/MEDAD if required, to ensure that the aggregate of the denominators reported by MTFs in a given base equals the total force in that base.

2. The TOO and MTF denominators are **not** to be confused with population at risk (PAR). PAR comprises the entire population that are at risk of a vital event; hence, when calculating rates of activity for a particular MTF or TOO, it would include everyone who potentially has access to care. MTFs may provide care to prisoners of war, HN civilians and others; therefore, it is not possible to use the PAR as the denominator.

3. There are legitimate OPSEC concerns when transmitting precise troop numbers; however, health surveillance is retrospective in nature and the information is already out of date by the time it is received for analysis. Therefore, reported TOO and MTF denominators should be reasonably accurate but not exact.

4. There may be circumstances when it is desirable to expand the denominator to include other military personnel (such as from the host nation), contractors, or possibly all personnel eligible to receive primary healthcare from deployed MTFs. The following questions should be considered:

- a. Can the expanded denominator still be measured reasonably accurately?
 - b. Do the additional personnel receive all, or almost all, of their care from the MTFs that are part of NATO command forces?
5. Under normal circumstances, the denominator should be defined in such a way that the answer to both of the above questions is yes.
6. In addition, expanding the denominator may have unintended consequences that will reduce the ability of surveillance to reliably detect issues affecting the deployed NATO force.

D.4 ANALYSIS METHODS AND FEEDBACK

1. The goal of analysis within NATO deployment health surveillance is to support decision making about whether or not to declare an outbreak and trigger actions such as activating a rapidly deployable outbreak investigation team (RDOIT).
2. The analysis should detect changes and differences in the occurrence of syndromes and diseases over time, between places and in communities of people sharing common traits.
3. NATO health surveillance data is deliberately stripped of any medical protected data in order to protect privacy; therefore, it is only possible to analyse change over time or differences by place.
4. With regard to OPSEC concerns, raw data such as numerators and denominators should not be reported in feedback.
5. There are multiple methods currently in use to analyse surveillance data and no single method is the best method. Therefore, in order to remain effective in a range of situations, several methods should be used in parallel.

<p>ANNEX E - RELATED NATO DOCUMENTS</p>
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STANAG 1059 Ed. 8 - LETTER CODES FOR GEOGRAPHICAL ENTITIES

STANAG 2037 AMedP-23 Ed. 9 - NATIONAL MILITARY STRATEGIES FOR VACCINATION OF NATO FORCES

STANAG 2048 AMedP-4.2 Ed. A Ver. 1 - DEPLOYMENT PEST AND VECTOR SURVEILLANCE AND CONTROL

STANAG 2132 Ed. 3 AMedP-8.1 Ed. A Ver. 1 - DOCUMENTATION RELATIVE TO INITIAL MEDICAL TREATMENT AND EVACUATION

STANAG 2136 AMedP-4.9 - REQUIREMENTS FOR OF WATER POTABILITY DURING FIELD OPERATIONS AND IN EMERGENCY SITUATIONS

STANAG 2228 AJP-4.10 Ed. B Ver.1 - ALLIED JOINT DOCTRINE FOR MEDICAL SUPPORT

STANAG 2231 AMedP-5.1 Ed. A Ver. 1 - PATIENT DATA EXCHANGE FORMAT FOR COMMON CORE INFORMATION

STANAG 2235 AMedP-4.8 Ed. A Ver. 1 - PRE- AND POST-DEPLOYMENT HEALTH ASSESSMENTS

STANAG 2242 Ed. 1 - POLICY FOR THE CHEMOPROPHYLAXIS AND IMMUNOTHERAPY OF NATO PERSONNEL AGAINST BIOLOGICAL WARFARE AGENTS

STANAG 2348 Ed. 5 AMedP-8.2 Ed. B Ver. 1 - BASIC MILITARY HOSPITAL (CLINICAL) RECORDS

STANAG 2409 AMedP-13 Ed. A - NATO GLOSSARY OF MEDICAL TERMS AND DEFINITIONS

STANAG 2462 AMedP-06 VOL II Ed. C - NATO HANDBOOK ON THE MEDICAL ASPECTS OF DEFENSIVE OPERATIONS (BIOLOGICAL)

STANAG 2481 Ed. 1 - MEDICAL INFORMATION COLLECTION AND REPORTING

STANAG 2522 ATP-3.8.1 II Ed. A Ver. 1 - SPECIALIST CBRN DEFENCE CAPABILITIES

STANAG 2529 Ed. 2 AMedP-7.7 Ed. A Ver. 1 - RAPIDLY DEPLOYABLE OUTBREAK INVESTIGATION TEAM (RDOIT) FOR SUSPECTED USE OF BIOLOGICAL WARFARE AGENTS

STANAG 2542 Ed. 1 AJMedP-1 - ALLIED JOINT MEDICAL PLANNING DOCTRINE

STANAG 2543 Ed. 1 - STANDARDS FOR DATA INTERCHANGE BETWEEN HEALTH INFORMATION SYSTEMS

STANAG 2547 Ed. 2 AJMedP-3 Ed. A Ver. 1 - ALLIED JOINT DOCTRINE FOR MEDICAL INTELLIGENCE

STANAG 2552 Ed. 2 AMedP-1.3 - GUIDELINES A FOR MULTINATIONAL MEDICAL UNIT

STANAG 2559 AMedP-4.3 Ed. A Ver. 1 - HUMAN RABIES PROPHYLAXIS IN OPERATIONAL SETTINGS

STANAG 2561 Ed. 1 AJMedP-4 - ALLIED JOINT MEDICAL FORCE HEALTH PROTECTION DOCTRINE

STANAG 2562 AJMedP-5 Ed. A Ver. 1 - MEDICAL COMMUNICATIONS AND INFORMATION SYSTEMS (MedCIS)

STANAG 2596 AJMedP-7 Ed. A Ver.1 - ALLIED JOINT MEDICAL DOCTRINE FOR SUPPORT TO CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN) DEFENSIVE OPERATIONS

STANAG 2873 Ed. 4 AMedP-07 Ed. D - CONCEPT OF OPERATIONS OF MEDICAL SUPPORT IN CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR ENVIRONMENTS

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