Socialstyrelsen

eHälsomyndigheten

Medical transport in Sweden in times of crisis and war

Final report on government assignment S2023/03207 (partial)

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Preface

On 7 December 2023, the Government tasked the National Board of Health and Welfare and the Swedish eHealth Agency with surveying medical transport resources and proposing a plan for national coordination in times of peacetime crisis, heightened state of alert and, ultimately, war. This report is the authorities' final report on the assignment.

Medical transport is a vital part of a well-functioning healthcare chain. In the event of crisis or war, the need for medical transport may exceed the capacity of a single region. In such a situation, it is essential to have a common understanding of which regional and national medical transport resources can be used, and how these resources can be coordinated in a way that minimises the consequences of the crisis.

In this report, the National Board of Health and Welfare and the Swedish eHealth Agency present a survey of the resources and organisations available for medical transport in Sweden. Based on this survey, we present a proposal for a national plan for how medical transport could be coordinated from different time perspectives and in different typical scenarios. We also describe how the national plan can be supplied with information using the national digital infrastructure as a building block. We also propose a number of measures within the current responsibilities of the regions, the National Board of Health and Welfare and the Swedish eHealth Agency. Finally, we identify a number of measures which, after more detailed investigation, would further strengthen national medical transport capacity.

We hope that this report will help our public authorities to strengthen the crisis preparedness and coordination capacity of the healthcare system in the event of crisis or war.

Bruno Ziegler, medical expert at the National Board of Health and Welfare, headed the project together with Åsa Zetterström Klintsjö and Anne Simmasgård, investigators at the Swedish eHealth Agency. Jenny Fernebro at the National Board of Health and Welfare and Susanna Wahlberg at the Swedish eHealth Agency were the responsible unit managers.

The National Board of Health and Welfare and the Swedish eHealth Agency would like to take this opportunity to thank the individuals and organisations that have contributed to this work in various ways.

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Summary

On 7 December 2023, the Government tasked the National Board of Health and Welfare and the Swedish eHealth Agency with surveying medical transport resources and proposing a plan for national coordination in times of peacetime crisis, heightened state of alert and, ultimately, war.

In this final report, the National Board of Health and Welfare and the Swedish eHealth Agency present a survey of the resources and organisations available for medical transport, as well as various types of reinforcement resources that could be used to supplement regular medical transport resources in the event of crisis or war. The survey also includes the emergency alert chain. In addition, we examined how medical transport is coordinated in our Nordic neighbouring countries, as well as in war-torn Ukraine.

Based on the survey, we describe a target scenario for medical transport and medical transport coordination in Sweden in the event of crisis or war.

We then present a proposal for a national plan for how medical transport could be coordinated based on the current conditions. The plan is designed as a matrix based on three time phases and aims to answer the question “who does what when?” in a crisis or war situation. We describe how the plan can be implemented and also test how national coordination can be achieved based on four typical scenarios.

Furthermore, we describe how the national plan can be supplied with information using the national digital infrastructure as a building block. This description is illustrated with the help of a prototype for situational assessment related to medical transport. Cost estimates for the development of an IT solution that corresponds to the prototype are also presented.

We have drawn the following conclusions from our work on the government assignment:

- The conditions and need for national coordination of medical transport and reinforcement resources vary in different crisis and war scenarios.
- There are several different types of medical transport and reinforcement resources in Sweden, but no coordinated national dimensioning of the collective transport resources based on the needs that may arise in crisis or war.
- New concepts for medical transport reinforcement resources need to be developed, and current regulations need to support such development.
- Sweden’s medical transport coordination system needs to be integrated with corresponding systems in the Nordic countries, NATO, the EU and the WHO.

- There is a need for a national digital situational assessment for medical transport in crisis situations or incidents involving multiple regions. An in-depth needs analysis and iterative development based on user needs are needed to develop a situational assessment.
- Civil-military cooperation with regard to medical transport needs to be deepened, concretised and based on common principles.
- Conditions are needed for nationally uniform medical priorities in relation to medical transport.
- Interoperability (legal, organisational, semantic and technical) as relates to medical transport needs to be strengthened, both between different types of medical transport and between emergency response centres.

Introduction

About the government assignment and our implementation

The government assignment

On 7 December 2023, the Government tasked the National Board of Health and Welfare and the Swedish eHealth Agency with surveying medical transport resources and proposing a plan for national coordination in times of peacetime crisis, heightened state of alert and, ultimately, war.[1]

The government assignment states that

- The survey shall encompass civilian and military resources for primary and secondary transport and include an account of the resources available at the local, regional and national level, both publicly and privately run. The assignment also includes surveying and describing existing medical transport organisations.
- The National Board of Health and Welfare shall analyse whether civilian vehicles that are not part of any existing medical transport organisation should be included and, if deemed appropriate, include them in the survey.
- Based on the survey, the authorities shall propose a plan for national coordination of medical transport. The proposed national coordination plan shall provide an overview and the conditions for effectively coordinating available resources as needed in times of peacetime crises, heightened alert and, ultimately, war.
- The authorities shall jointly investigate and propose in which cases it is appropriate to use the national medical transport coordination plan. The authorities shall also report on how the proposed national plan could be implemented. The report shall specifically indicate how information in the proposed national plan can be kept up-to-date.
- Based on its responsibility for the national digital infrastructure, the Swedish eHealth Agency shall analyse and propose how medical transport coordination can be supplied with information based on the national digital infrastructure.
- The report shall also include cost estimates for the implementation, establishment and management of all proposals submitted.

[1] Assignment to survey medical transport resources and propose a plan for national coordination in times of peacetime crisis, heightened state of alert and, ultimately, war S2023/03207 (partial).

When carrying out the assignment, information and opinions shall be obtained from regions, municipalities, the Swedish Civil Contingencies Agency, the Swedish Armed Forces, the Swedish Maritime Administration, the Swedish Police Authority, the Swedish Transport Administration and the Swedish Association of Local Authorities and Regions. In addition, comments shall be obtained from the Swedish Armed Forces regarding the authority's need for and capacity to provide medical transport in peacetime and states of heightened alert.

The National Board of Health and Welfare shall have overarching responsibility for coordinating the assignment.

The National Board of Health and Welfare and the E-health Authority shall submit a joint final report on the assignment to the Government Offices (Ministry of Health and Social Affairs) by 16 February 2025. The final report shall contain the survey and the proposed plan for national coordination of medical transport.

Scope, limitations and considerations

In addition to what is specified in the government assignment, we included the following in our work:

- Emergency response centre operations (alarm response, prioritisation, dispatch, technical systems)
- An international perspective, focusing specifically on the Nordic countries and Ukraine
- Planning conditions for the coordination of medical transport within NATO

In our work on the assignment, we only briefly touched on the following:

- Issues relating to the staffing of medical transport
- Infrastructure issues

In our work on the assignment, we have excluded the following:

- Animal healthcare and veterinary medicine
- Transport of deceased persons
- Transport of healthcare personnel or healthcare products without simultaneous patient transport
- Medical transport organised by Sweden in other countries
- Medical transport organised by another country in Sweden, as relevant
- Manual backup procedures for digital systems

We based our work on current regulations, preparedness principles and the division of responsibilities for preparedness. For this reason, we have not investigated the following:

- Other organisations for SOS Alarm, regionally operated emergency response centres, Svensk Luftambulans (Swedish Air Ambulance, SLA) or Kommunalförbundet Svenskt Ambulansflyg (Swedish Municipal Association for Air Ambulance Services, KSA)
- Changes to SOS Alarm's 112 assignment or changes to the division of responsibilities between SOS Alarm and regionally operated emergency response centres
- Mission and function of Svenska Nationella Ambulansflyget (Swedish National Air Medevac)
- State operational responsibility for medical transport or emergency response centres

Implementation and collaboration

The National Board of Health and Welfare and the Swedish eHealth Agency worked in close collaboration when carrying out the government assignment. The work was conducted in project form with joint steering and project groups. The National Board of Health and Welfare has had primary responsibility for coordinating the assignment. The authorities have jointly surveyed resources and organisations for medical transport and developed a proposal for a national coordination plan. The National Board of Health and Welfare has been responsible for the aspect concerning civilian vehicles that are not part of any medical transport organisation, while the Swedish eHealth Agency analysed and proposed how medical transport can be coordinated with information using the national digital infrastructure.

We collaborated with several actors in our work to survey medical transport resources and organisations. The content of the survey element of the report has been reviewed by the actors listed in the respective section of the text.

We collaborated with two external reference groups when developing a national medical transport coordination plan.

- **Reference group "National Actors"**, Föreningen för Ledningsansvariga inom Svensk Ambulanssjukvård (Association of Directors of Swedish Pre-Hospital Care, FLISA), the Swedish Armed Forces, Kommunalförbundet Svenskt Ambulansflyg (KSA), the Swedish Civil Contingencies Agency (MSB), Sjukvårdens larmcentral (Medical Emergency Response Centre), SOS Alarm, and Swedish Association of Local Authorities and Regions (SKR)
- **Reference group "Regional Representatives"**, with representatives from the North, Central, Southeast, South and East healthcare regions

During the course of the work, the organisations represented in either of the reference groups were given the opportunity to submit written comments on a draft proposal for a national plan and proposed measures.

On two occasions, the Swedish eHealth Agency demonstrated and gathered comments on the proposed prototype for supplying information to the national medical transport coordination plan. Participants from the reference groups were invited to take part on one occasion, while representatives from the Swedish Armed Forces were invited on the other.

Once the assignment had been completed, the National Board of Health and Welfare and the Swedish eHealth Agency gathered information and feedback from the following actors:

Almega, County administrative boards responsible for civil affairs – Working group on health, medical care and welfare, the voluntary defence organisation Bilkåren, Föreningen för Ledningsansvariga inom Svensk Ambulanssjukvård (FLISA), the Swedish Armed Forces*, the Home Guard, the Centre for Teaching and Research in Disaster Medicine and Traumatology (KMC) Östergötland, the Knowledge Centre in Disaster Medicine (KcKM) Umeå, Kommunalförbundet Svenskt Ambulansflyg (KSA), Kommunalförbundet Svensk Luftambulans (SLA), the Swedish Civil Contingencies Agency (MSB), Mid Sweden Healthcare Region, North Healthcare Region, National Programme Area "Emergency Healthcare", National Programme Area "Perioperative Care, Intensive Care and Transplantation", Nätverket Civilt Försvar (Civil Defence Network), Sjukvårdens larmcentral, the Sea Rescue Centre, the Swedish Police Authority*, Region Dalarna, Region Uppsala, the Swedish Maritime Administration*, the Swedish Association of Local Authorities and Regions (SKR)*, SOS Alarm, Red Cross of Sweden, Svenska Sjöräddningssällskapet (Swedish Sea Rescue Society), Southeast Healthcare Region, South Healthcare Region, the Swedish Transport Administration*, the medical transport centre at Karolinska University Hospital, Swedish Transport Agency, Region Västra Götaland, West Healthcare Region, Västtrafik, Vårdansvarskommittén (Parliamentary Committee of Inquiry concerning Mandatorship of Healthcare)

*) Actors specified in the government assignment

Terms, definitions and appendices in the report

Terms

Throughout the report, the National Board of Health and Welfare and Swedish eHealth Agency use the terms “we” or “the authorities” when referring to the two authorities jointly. When referring to only one of the authorities, the name of the authority in question is used.

The authorities’ view is that the phrases “National coordination plan...” and “National medical transport coordination plan” better reflect the content of the plan currently being presented than “Plan for national coordination...”. We therefore use these two phrases throughout the report.

Definitions

The term *medical transport* refers to the transport of sick and injured persons using means of transport specially designed for this purpose.[2] Examples of such means include road ambulances (including military ambulances), ambulance helicopters and ambulance airplanes.

The term *reinforcement resources* refers to means of transport that are not primarily used for medical transport, but which in certain situations can be used for medical transport for civilian health and medical services. Such resources may be state, regional, national, municipal or private. Examples include buses, airplanes, trains and ships.

The term *medical transport organisation* refers to an organisation that primarily provides medical transport services.[3]

Primary transport refers to medical transport from the site where the injury or illness took place to a hospital or other healthcare facility.

Secondary transport refers to medical transport between healthcare units.

[2] Cf. Chapter 7, Section 6 of the Health and Medical Services Act (2017:30).
[3] National Board of Health and Welfare's term bank.

Appendices

To streamline the report, we have included certain sections as appendices to the main text. These are:

- Surveys and international outlook
- Proposal for a national medical transport coordination plan
- Survey of information supply to the national medical transport coordination plan
- Prototype and conceptual solution for information provision

Background and context

Medical transport is a vital part of a well-functioning healthcare chain. Appropriate coordination, prioritisation and dispatch of medical transport resources are required to ensure efficient and safe medical transport. In times of peacetime crisis, heightened alert and, ultimately, war, questions about medical transport resources, possible reinforcement resources, interregional and national medical transport coordination, and information provision come to the fore. It is then important to have a common understanding of what resources are available and how regional and national coordination can be achieved.

The work we are doing as part of this government assignment is not taking place in a vacuum. Issues related to medical transport in times of crisis and war have been addressed in several previous inquiries, reports and government bills. We also note that work is underway at several levels in Sweden's preparedness system to strengthen crisis preparedness and the conditions for civil-military cooperation, as well as to deepen Sweden's international commitments and cooperation. Moreover, there are important lessons to be learned from the crises and wars of recent years, as well as from national exercises carried out that have involved medical transport. We have also observed that national coordination of intensive care transport is under development.

All of these lines of development are relevant to medical transport and medical transport coordination in times of crisis and war. In this introductory section, we delve into some of the basic premises we applied when working on the government assignment.

Medical transport in times of crisis and war has been investigated previously

In recent years, several government inquiries have drawn conclusions and presented proposals on issues relating to medical transport, reinforcement resources, information provision and medical transport coordination in times of crisis and war.[4] Positions on medical transport have also been taken by

[4] Inquiry into the preparedness of the healthcare system (SOU 2020:23 and 2022:6) and 112 inquiry (SOU 2018:28).

the Swedish Defence Commission[5], as well as in the Total Defence bills for 2021–2025[6] and 2025–2030.[7]

The National Board of Health and Welfare presented proposals for a national reinforcement organisation for medical transport [8] in 2022, and a report on pre-hospital emergency care in 2023.[9]

Some of the recurring conclusions and proposals in these reports include the following:

- In the event of a peacetime crisis, heightened state of alert and, ultimately, war, there is a need for effective interregional, higher regional or national coordination of medical transport.
- There is a need for a national overview and descriptions of the medical transport resources available regionally and nationally.
- A national overview is needed of the reinforcement resources that can be utilised in times of peacetime crisis or war. Forms for how reinforcement resources can be manned and coordinated in such events also need to be ensured.
- The division of responsibilities between different principals in the emergency response chain carries a risk of coordination difficulties and time losses in the prioritisation and dispatch of medical transport. Such difficulties are likely to be exacerbated in the event of major societal disruptions.
- It is not realistic to create special functions for prioritisation and dispatch that are only activated in the event of severe stress, a heightened state of alert and war.
- An IT system is needed that provides a national overview of available medical transport resources.
- In wartime, there is limited potential to deploy civilian operations in combat zones. The provision of military medical care at the combat level must be limited to life-sustaining measures that enable further transport in the care chain to field hospitals or civilian hospitals.
- It is desirable for the transport of patients to civilian health and medical service facilities to take place without transfers as far as possible.
- For cooperation at the national level, there must be common principles for prioritisation and dispatch, as well as common definitions, minimum requirements and nationally agreed standards concerning medical transport.

[5] Strengthened defence capability, Sweden as an ally, Ds 2024:6.
[6] Total Defence 2021–2025, bill 2020/21:30.
[7] Total Defence 2025–2030, bill 2024/25:34.
[8] Strengthening national capacity to respond to mass casualty incidents. National Board of Health and Welfare 2022 f.
[9] Sweden's pre-hospital emergency care. National Board of Health and Welfare 2023.

Sweden's international commitments and cooperation are deepening

Sweden's membership in NATO has resulted in the collective defence commitment as an ally now being a central part of Swedish security and defence policy. Swedish NATO membership also brings with it new expectations regarding the capabilities and capacity of Swedish healthcare, for example in terms of mass casualty management, host nation support and the ability to assist in large-scale patient evacuation within the framework of a NATO operation.

In parallel with Sweden strengthening its capabilities as a NATO ally, healthcare cooperation between the Nordic countries[10], within the EU[11] and with the WHO for the management of peacetime crises is being deepened. The Nordic mass casualty plan currently under development, as well as the experiences from European coordination of medical evacuations from Ukraine, are examples of such cooperation.[12, 13]

Sweden's deepened international commitments and cooperation impose new planning requirements on Swedish healthcare in times of peacetime crisis and war. Such changed conditions also affect the planning of medical transport and medical transport coordination in Sweden.

International cooperation regarding health and medical services also necessitates adjustments to legislation in this area. In December 2024, the Ministry of Health and Social Affairs submitted proposals aimed at ensuring that Swedish legislation regarding health and medical services is adapted to international cooperation, particularly with regard to crises, disasters, security and defence.[14]

Total defence's health and medical services are under development

Cooperation and planning for total defence's health and medical services takes place at multiple levels in the preparedness system. The Government has tasked the National Board of Health and Welfare and the Swedish

[10] Nordic Public Health Preparedness Agreement (SÖ 2003: 55); Ministry for Foreign Affairs 2023.
[11] Emergency Response Coordination Centre (ERCC); European Commission 2023, https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/emergency-response-coordination-centre-ercc_en
[12] Assignment to the National Board of Health and Welfare regarding a Nordic cooperation project for mass casualty management (S2024/00807 (partial)); Ministry of Health and Social Affairs 2024
[13] Medical evacuations of Ukrainian patients carried out; National Board of Health and Welfare 2022, https://www.socialstyrelsen.se/om-socialstyrelsen/pressrum/press/medicinska-evakueringar-av-ukrainska-patienter-genomforda/
[14] Memorandum: What is necessary should be permitted – a law on international medical cooperation, Ds 2024:33.

Armed Forces with further developing cooperation between military operations and civilian health and medical services.[15] The assignment includes developing and establishing procedures for cooperation and management between authorities, military regions and civilian health authorities, both in preparatory planning and in planning after an incident has occurred.

At a higher regional level, cooperation takes place between the Swedish Armed Forces and regional healthcare in civilian areas. The county administrative boards responsible for civil affairs coordinate civil defence measures, and work in consultation with the Swedish Armed Forces to ensure that civil and military defence are coordinated at the regional level.[16]

In 2023, the National Board of Health and Welfare developed a dataset for key figures and dimensioning targets for civilian health and medical services within total defence. The National Board of Health and Welfare's communication of this dataset has made it possible for regions and actors in the civil sector to plan health and medical services based on the medical care needs that may arise from various types of armed attacks.[17] In the 2024 appropriation directions, the National Board of Health and Welfare was tasked with developing and updating the dataset for these key figures and dimensioning targets. The planning conditions that Swedish NATO membership entails is to be included in the work.[18]

There are important lessons to be learned from war, crisis and training

The crises of recent years in Sweden and our neighbouring countries have offered valuable lessons regarding medical transport and the coordination of medical transport in times of crisis and war.

Russia's war of aggression in Ukraine has, among other things, created a need to find new solutions for how medical transport can be carried out, both close to the front and over longer distances. For example, medical transport via converted buses and trains has proven to be effective in the conditions of war. The Ukrainian healthcare system has also had to find new solutions – both digital and analogue – for coordinating medical transport in a war situation.

[15] Assignment to the National Board of Health and Welfare and the Swedish Armed Forces to further develop cooperation between military operations and civilian health and medical services (S2024/00865 (partial)) Ministry of Health and Social Affairs 2024.
[16] Ordinance (2022:525) on county administrative boards responsible for civil affairs
[17] Key figures and dimensioning targets for health and medical services planning for civil defence. National Board of Health and Welfare 2023.
[18] Appropriation directions for the 2024 budget year regarding the National Board of Health and Welfare; National Financial Management Authority 2023.

In Sweden, the COVID-19 pandemic of 2020–2023 has provided experience of how national medical transport coordination can be achieved during a protracted peacetime crisis situation. The national medical transport coordination developed during the pandemic was based on shared responsibility and cooperation between regions, representatives of relevant professions, and various national actors.

In 2024, Sweden also had the opportunity to practise how national medical transport coordination can be achieved within the framework of a coordinated NATO operation (the Casualty Move 2024 (CAMO24) exercise) and in an exercise focusing on a national disaster with an overwhelming number of casualties (the KBÖ24 disaster medical preparedness exercise).[19, 20] Both of these exercises have provided important insights into the conditions for national medical transport coordination, as well as how such coordination can be achieved in practice.

National coordination of intensive care transport has begun

In 2019, the National Board of Health and Welfare proposed that intensive care transport with specialised teams should be classified as national specialised medical care (referred to as NHV).[21] The regional health and medical care directors did not consider the NHV structure to be optimal for such operations and, with the support of SKR, proposed a nationwide cooperation model instead. According to the proposal, each healthcare region [22] would organise intensive care transport within its own healthcare region, and cooperates with other healthcare regions when interregional transport is needed. A national coordination mechanism would rotate between healthcare regions that want to take responsibility.[23]

The health and medical care directors have approved the proposal and implementation has begun, but no timetable has been set.

[19] FINAL EVALUATION REPORT (FER) EXERCISE CAMO24 NATO 2024. See also below.
[20] The National Board of Health and Welfare and the regions in a unique preparedness exercise. National Board of Health and Welfare 2024, https://www.socialstyrelsen.se/om-socialstyrelsen/pressrum/press/socialstyrelsen-och-regionerna-i-unik-beredskapsovning/ See also below.
[21] National specialised medical care refers to publicly funded health and medical services that need to be concentrated in one or more units, but not in every cooperation region, in order to maintain quality, patient safety and knowledge development and to achieve an effective use of health and medical care resources. See Chapter 2, Section 7 of the Health and Medical Services Act.
[22] In SKR's report, the term “healthcare region” is used in the same sense as “cooperation region” in Chapter 3, Section 1 of the Health and Medical Services Ordinance (2017:80).
[23] A nationwide and regional cooperation model for intensive care transport. SKR 2024.

Survey of the medical transport sector

The survey element of the assignment is presented in its entirety in Appendix 1. The report is divided into the following sections:

- Civilian medical transport resources
- Civilian medical transport organisations
- Civilian reinforcement resources for medical transport
- The Armed Forces' medical care system and medical transport resources
- The alarm chain and emergency response centres
- International outlook – the Nordic countries
- Experiences of medical transport and medical transport coordination in war-torn Ukraine

Below we present summaries of some of the areas we have investigated.

Many actors have the capacity to perform medical transport

In Sweden, medical transport services are provided by several different actors. The regions manage most of the country's medical transport resources under their own auspices, through agreements with private operators or through municipal associations. In addition, there are certain medical transport resources under state and national control.

The majority of the country's medical transport resources consist of various types of road ambulances, but medical transport can also be carried out by air or water using ambulance helicopters, intensive care helicopters, ambulance airplanes or ambulance boats.

The Swedish Armed Forces have specially built military ambulances and standard military medical transport vehicles.

For simpler types of medical transport without a need for medical care, there are various service vehicles, i.e. vehicles for recumbent medical transport or recumbent medical travel. Transport by such means is of lower quality than ambulances in terms of personnel and equipment.

There are several possible reinforcement resources, but no coordination

In addition to existing medical transport services, there are means of transport that can be used as *reinforcement resources* for transporting the sick and injured. The term reinforcement resources refers to means of transport that are not primarily used for medical transport, but which in certain situations can be used for medical transport for civilian health and medical services. Usually, the means of transport, its equipment and its crew all need to be adapted to be able to use it for medical transport.

Such resources could be:

- State-owned resources, such as the Swedish Maritime Administration's SAR helicopters, some of the Swedish Transport Administration's tracked vehicles, and the Armed Forces' helicopters and tracked vehicles
- Municipal resources, such as tracked vehicles which some municipalities use in their emergency services
- Resources of non-profit organisations, such as means of transport from Svenska Sjöräddningssällskapet and certain other volunteer organisations

The conditions for using, manning and coordinating reinforcement resources for civilian medical transport missions differ for each resource. For example, the Swedish Maritime Administration has the instruction-regulated option of providing helicopter transport of injured or sick persons at the request of the health authority under certain circumstances. The Armed Forces' ability to provide support to civilian health and medical services in peacetime crisis situations is regulated in the so-called Support Ordinance.[24] The conditions for the Swedish Maritime Administration and the Swedish Armed Forces to carry out medical transport missions are described in more detail in Appendix 1.

There are also interesting examples of how certain civilian vehicles that are not normally used for medical transport can be modified for this purpose in times of crisis and war. Such types of reinforcement resources could be useful for large-scale patient evacuation for various reasons. From a preparedness perspective, the possibility of using trains and regional buses as reinforcement resources is particularly interesting.

[24] Swedish Armed Forces' Support for Civilian Activities Ordinance (2002:375).

In Appendix 1, we describe some concrete examples of how:

- Swedish regions have developed concepts for how regional buses can be modified to enable patient transport in times of crisis or war.
- Ukraine, Germany, Italy and Poland have developed concepts for how trains can be converted into so-called ambulance trains, thereby enabling long-distance patient transport while treatment is being given.

Based on the survey, we can conclude that there is currently a lack of coherent planning for how different types of reinforcement resources can be developed, made available, coordinated and dimensioned in crisis or war situations that require large-scale patient transport. In order to be used for medical transport, the manning of reinforcement resources with healthcare personnel must also be ensured.

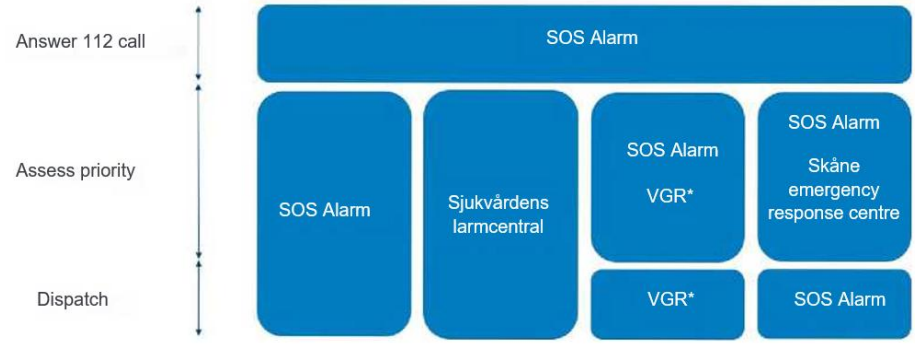
We also note that the application of certain regulations needs to be further investigated, for example the regulations governing the seizure and disposal of property, as well as the regulations for type approval of vehicles.

The alarm chain is fragmented

In the alarm chain, the public service task of answering incoming 112 calls is separate from the emergency response centre's task of prioritising and dispatching medical transport resources. SOS Alarm has national responsibility for answering incoming 112 calls in Sweden.

SOS Alarm also operates emergency response centres in fifteen regions through agreements with the regions. In these regions, emergency calls are handled as an unbroken chain. In four regions, emergency response centre operations are instead run by the region itself, in the form of Sjukvårdens larmcentral. In two regions, emergency response centre operations are run in close cooperation between SOS Alarm and the region's emergency response centre. In all these cases, the 112 call must be transferred between SOS Alarm and the region's emergency response centre.

Figure 1. Schematic overview of different variants of interplay between the 112 service and emergency response centre operations



* VGR = Region Västra Götaland

The various emergency response centre operators use different IT systems and apply different medical decision support tools. Our experience is that there are limitations in the ability to transfer data between SOS Alarm and Sjukvårdens larmcentral.

In summary, this means that there is a lack of national uniformity in the operations of the emergency response centres. We note, in line with other government inquiries, that this circumstance poses challenges in terms of creating a system for national medical transport coordination, and that these challenges may limit the possibilities for medical transport coordination in the event of crisis or war.

Prerequisites for national medical transport coordination

Sweden's crisis preparedness system can be described by the fundamental principles of responsibility, proximity and equality, as well as geographical area responsibility. Civil defence is built on society's crisis preparedness and collective resilience. Crisis preparedness is therefore the foundation for the ability to respond effectively when there is a heightened state of alert.

Coordination refers to the coordination of resources and efforts to achieve higher quality and greater efficiency.[25] Coordination can be achieved through *leadership* or *cooperation*.[26] The division is based on whether there are formal management or decision-making mandates in the relationship between different actors, or whether the work is instead carried out jointly by the actors. Cooperation means achieving focus and coordination in a context where no one has the mandate to decide over anyone else.[27] Coordination within Swedish crisis preparedness and civil defence is largely based on cooperation.

The regions are responsible for medical transport

Medical transport is healthcare.[28] The region is responsible for providing healthcare to those who reside in the region and urgent (emergency) care to those who are present in the region but do not reside there.[29] The region is responsible for ensuring that there is an appropriate organisation within the region to transport people whose condition requires transport to and from healthcare facilities or doctors by means of transport specially designed for this purpose.[30]

The region shall plan its health and medical services based on the care needs of those who fall under the region's responsibility to provide health and medical services. The region shall also plan its health and medical services in a manner that ensures that disaster medical preparedness is maintained.[31] Each region shall have a disaster medical preparedness plan that specifies how necessary healthcare functions are to be alerted in the event of a serious

[25] National Board of Health and Welfare's term bank.
[26] SOU 2022:6, p. 126 ff.
[27] Common ground – framework for management and cooperation. MSB 2024.
[28] Chapter 8, Section 4 of the Health and Medical Services Act (2017:30).
[29] Chapter 8, Sections 1 and 4 of the Health and Medical Services Act.
[30] Chapter 7, Section 6 of the Health and Medical Services Act.
[31] Chapter 7, Section 2 of the Health and Medical Services Act.

incident [32], who is to lead and coordinate health and medical services, and which other actors the region is to collaborate with if necessary.[33]

In the event of a serious incident or risk of such an incident, each region must, among other things, have the capacity to raise the alarm, carry out medical transport and collaborate with other actors at the local, regional and national level.[34] Each region shall have an official on standby ("tjänsteman i beredskap", TiB)[35] and a special medical management team ("särskild sjukvårdsledning", SSL) responsible for management duties.[36] The special medical management team shall be able to operate at the regional level and in an affected area, in pre-hospital care and in healthcare units.[37]

National Board of Health and Welfare's responsibility for coordination

The National Board of Health and Welfare is the administrative authority for activities relating to health and medical services.[38] The National Board of Health and Welfare shall coordinate and supervise the planning of civilian healthcare preparedness.[39] The National Board of Health and Welfare also has specific responsibility for civil preparedness and has sectoral responsibility for the civil preparedness sector "Health, Medical Care and Welfare".[40]

In peacetime crisis situations, the National Board of Health and Welfare shall be able to establish a management organisation for direction, coordination and information sharing.[41] The National Board of Health and Welfare's crisis management plan also defines the authority's responsibility for a specific civil preparedness sector. The National Board of Health and Welfare shall have an official on standby (TiB) tasked with initiating and coordinating the initial work to detect, verify, raise the alarm and share information in peacetime crisis situations.[42] The National Board of Health

[32] An incident that is so extensive or serious that resources must be organised, managed and used in a special way (Chapter 2, Section 1 of the National Board of Health and Welfare's regulations and general guidelines (SOSFS 2013:22) on disaster medical preparedness).
[33] Chapter 5, Sections 2 and 4 of SOSFS 2013:22.
[34] Chapter 4, Section 1 of SOSFS 2013:22.
[35] Chapter 6, Section 1 of SOSFS 2013:22.
[36] Chapter 6, Section 2 of SOSFS 2013:22.
[37] Chapter 6, Section 2, second paragraph of SOSFS 2013:22.
[38] Section 1 of Ordinance (2015:284) containing Instructions for the National Board of Health and Welfare.
[39] Section 9, First Paragraph, Item 1 of Ordinance (2015:284) containing Instructions for the National Board of Health and Welfare.
[40] Section 1a of Ordinance (2015:284) containing Instructions for the National Board of Health and Welfare.
[41] National Board of Health and Welfare's crisis management plan.
[42] Section 15 of Ordinance (2022:524) on the preparedness of public authorities.

and Welfare's TiB is available around the clock to various actors in the Swedish crisis preparedness system.

The National Board of Health and Welfare is responsible for regular (weekly) national coordination conferences involving the TiBs from the regions and the authorities with specific responsibility for civil preparedness. The coordination conference provides an opportunity for ongoing national coordination regarding the current situation in health and medical care. The coordination conference also aids in the coordination the National Board of Health and Welfare is responsible for in the event of a peacetime crisis.

The National Board of Health and Welfare's handling of special incidents, including mass casualty incidents, is otherwise based on pre-existing working methods, procedures, processes and organisation, including the Focus and Coordination Process (PIS).[43]

National mass casualty plan

The National Board of Health and Welfare has presented a national mass casualty plan in two reports, as well as how national and regional capacity during mass casualty incidents can be strengthened.[44, 45] In order for the national plan to be used, there must be a need for interregional or national coordination during a mass casualty incident. This is based on the fact that one or more regions lack the resources to meet the medical care needs arising from the incident.

Among other things, the national plan describes a national mass casualty alert, a model for national mass casualty triage, and forms for the support needs of affected regions and the non-affected regions' capacity to provide support. The forms request information on factors such as medical transport capacity.

The National Board of Health and Welfare's role in national coordination is to facilitate the coordination of resources between affected and supporting regions. The coordination of medical transport has been assessed as an important component of the national coordination of a mass casualty incident.

[43] Focus and coordination in health and medical services in the event of a special incident. National Board of Health and Welfare; 2020.
[44] Strengthening national capacity to respond to mass casualty incidents. Interim report on mass casualty plan, treatment capacity and reinforcement organisation for medical transport. National Board of Health and Welfare; 2022.
[45] Strengthened national and regional capacity in mass casualty incidents. National Board of Health and Welfare; 2024.

Implementation of the national mass casualty plan has begun within the National Board of Health and Welfare's internal crisis management organisation. Application of the national mass casualty plan has also been practised in a national disaster medical preparedness exercise in autumn 2024 (KBÖ24).

Two national knowledge support resources on crisis preparedness

The healthcare system's surge capacity

In the National Board of Health and Welfare's knowledge support resource *The healthcare system's surge capacity*, the term "surge capacity" is used to mean *the ability to increase capacity to handle a sudden surge in patients*. The knowledge support resource describes the components that need to be taken into account in the work to increase an organisation's capacity through what is known as the 4S model (made up of the components Staff, Space, Stuff and System). Medical transport and pre-hospital care are covered by the knowledge support resource.

The knowledge support resource also describes how an organisation's ability to increase its capacity can be tested and evaluated, as well as how conclusions from such testing can be implemented in the organisation.

The knowledge support resource is primarily intended for regional health and medical services, but the National Board of Health and Welfare notes that related areas of activity, such as municipal health and medical services, also need to be able to increase their capacity to handle a sudden surge patients in the event of a peacetime crisis situation or war.[46]

An evaluation has shown that those working in preparedness and emergency care in the regions are aware of the PLUS concept.[47] In our assessment, there is a need to include medical transport to an even greater extent in the regions' surge capacity work.

[46] The healthcare system's surge capacity. National Board of Health and Welfare; 2023.
[47] Preliminary analysis of the regions' surge capacity in times of peacetime crisis and war. Interim report on the government assignment to analyse, develop and support the regions' ability to increase treatment capacity in times of peacetime crisis, heightened state of alert and, ultimately, war. National Board of Health and Welfare; 2024.

Healthcare priorities in war and peacetime disasters

The knowledge support resource *Healthcare priorities in war and peacetime disasters* is a guide for healthcare preparedness at all levels. The support resource is intended to help regions and municipalities prepare for difficult prioritisation situations, so that high-priority care is not subject to greater rationing than low-priority care. The knowledge support resource also aims to reduce ethical stress, increase transparency and serve as a tool for rationing. Moreover, the support resource creates conditions to enable uniform decision-making across the country.

The National Board of Health and Welfare's experience is that the regions need further support in translating the principles set out in the knowledge support resource into concrete medical policy decisions and priorities in relation to medical transport in various crisis situations.[48]

[48] Healthcare priorities in war and peacetime disasters: Knowledge support resource for healthcare preparedness. National Board of Health and Welfare; 2022.

A target scenario for medical transport in times of crisis and war

Based on what has been reported so far, the following section describes a target scenario for medical transport, reinforcement resources and medical transport coordination in times of crisis and war. The target scenario forms the basis for the proposed national medical transport coordination plan, as well as the proposed measures presented at the end of the report.

Target scenario for medical transport, reinforcement resources and medical transport coordination in times of crisis and war:

- Regions have contingency plans in place to handle primary transport in the event of various types of mass casualty incidents. This preparedness includes cooperation with neighbouring regions, as well as planning and agreements on how regional reinforcement resources can be used in the event of extensive primary transport needs.
- The prioritisation and dispatch of civilian medical transport resources in both peacetime crisis situations and in wartime are carried out via the regular emergency response centres. The emergency response centres have ensured they have the capacity for cooperation, information exchange and redundancy with other emergency response centres incorporated in their contingency planning, regardless of who is responsible for the centre in question.
- There is a common technical interface between the IT systems of different emergency response centres to enable interregional operational overview and coordination of available medical transport resources.
- There are designated state/national reinforcement resources for medical transport in the event of a crisis, a state of heightened alert or war, as well as a plan for how such reinforcement resources are to be coordinated and manned.
- New conceptual solutions have been established for how certain civilian vehicles can be used as reinforcement resources for medical transport at the regional and national level. In this context, the possibility of using trains and regional buses as reinforcement resources is of particular interest. It is clear how convertible vehicles are to be type-approved. For wartime needs, relevant vehicles are selected and placed in wartime locations in advance.

- National coordination responsibility primarily concerns secondary and redistribution transport. Within its crisis organisation, the National Board of Health and Welfare has developed a mechanism for coordinating resources between affected and supporting regions, coordinating with national and international actors, and activating state/national reinforcement resources.
- National coordination can be supported by digital tools that provide a national situational assessment of factors such as medical transport and current incidents.
- Procedures and channels of communication for medical transport cooperation within the Nordic region and the EU, as well as with NATO and the WHO, are established and practised.
- In the event of war on Swedish territory, military medical services are responsible for evacuations and medical transport from the combat zone. In the first instance, patients are transported to civilian health and medical services without transfers. If transfers are nevertheless necessary, there is an established and practised system for setting up ambulance exchange points between military and civilian medical transport.
- There is an established and practised system for civil-military operational medical transport coordination, based on *liaison officers* from the Swedish Armed Forces being able to work in civil emergency response centres during times of heightened alert and war.
- Civil-military coordination at the national level and in civilian areas also includes planning for medical transport in times of heightened alert and war.
- There is a mechanism in place for coordinating national medical transport in the event of large-scale patient evacuation from Sweden's immediate vicinity within the framework of a NATO operation. The mechanism is compatible with current regulations and preparedness principles in Sweden. There is a technical solution for tracking and monitoring evacuated patients (*patient tracking*).
- Interoperability as relates to medical transport is facilitated by the application of nationally agreed standards for medical transport vehicles and equipment. Terms, concepts and definitions are also harmonised in the civil, civil-military and NATO contexts.
- There is national harmonisation (common principles) of medical priorities and medical policy decisions related to medical transport. This harmonisation applies to civilian healthcare in peacetime crises, as well as between civilian healthcare and military medical services in wartime.

Proposal for a national medical transport coordination plan

National medical transport coordination plan – “Who does what when?”

The national plan is described in the form of a matrix

In this report, the term “plan” refers to a description of what is to be done, in what order and by which actor, with the aim of achieving coordination in the field of medical transport. In other words – who does what and when?

With regard to “when”, we note that the need for national coordination varies at different stages of a crisis situation. In our report on the plan, we have therefore divided the progression of a crisis situation into three different stages.

The first phase corresponds to the immediate response of an affected region to a crisis situation. This typically takes place within seconds to hours of a sudden event, such as a mass casualty incident. The response is based on the region’s contingency planning and other preparations. The response may include operational support from neighbouring regions, for example in the case of medical transport. The affected and neighbouring regions will handle moderately extensive incidents within the framework of Phase 1.

The second phase begins when an affected region assesses that the resources of its own and neighbouring regions are insufficient to handle the situation at hand. Under the national mass casualty plan[49], the region then has the option of escalating the response to the National Board of Health and Welfare to enable national coordination. If the situation is a sudden mass casualty incident, the National Board of Health and Welfare can initiate such coordination within hours of the incident occurring.

A possible third phase in a crisis situation occurs in the event of a more protracted incident. The transition to a third phase may be more or less distinct, but the protracted time frame places special demands on coordination and endurance. The COVID-19 pandemic in 2020–2023 is an

[49] Strengthened national and regional capacity in mass casualty incidents. National Board of Health and Welfare; 2024.

example of such a protracted incident. Phase 3 could also represent a war or grey zone situation requiring the coordination of medical transport.

Figure 2. Different time phases in a crisis situation

In terms of "what", we describe a number of activities that are necessary to achieve a common focus and coordination among actors in a crisis situation. The activities have been developed based on the MSB's joint framework for focus and coordination among actors, *Common Ground*. The activities relate to times of peacetime crisis as well as heightened alert or war.[50]

By combining the activities in "what" with the time perspective "when", a matrix is created. The matrix can then be used to describe the roles, responsibilities, mandates and content of national joint coordination at different time phases. The completed matrix thus describes "who does what when" in terms of coordinating medical transport. The matrix thus constitutes the National Board of Health and Welfare and the E-health Authority's proposal for a national medical transport coordination plan. The proposed national plan is presented in Appendix 2.

Typical scenarios: when should the national plan be used?

To examine the conditions for national coordination of medical transport in more detail, this section tests the proposed national plan against four different typical scenarios. For each scenario, we also identify a number of proposed measures that we believe would further strengthen the conditions for national coordination.

[50] Common ground – framework for management and cooperation. MSB 2024.

The four typical scenarios are:

1. Peacetime mass casualty incident
2. Protracted peacetime crisis situation, e.g. epidemic/pandemic
3. Large-scale patient evacuation from our immediate vicinity within the framework of a NATO operation
4. Armed attack against Sweden with military and civilian casualties

Scenario 1 – Peacetime mass casualty incident

Regional and national coordination of medical transport in the event of a peacetime mass casualty incident corresponds to Phases 1 and 2 in the national plan. The overarching planning for national coordination in the event of a mass casualty incident has been described above based on the National Board of Health and Welfare's report *Strengthened national and regional capacity in mass casualty incidents*.[51] The planning for Phases 1 and 2 thus specifies how medical transport coordination can be achieved within the framework of national mass casualty planning.

In the event of a mass casualty incident, an affected region will respond based on its disaster medical preparedness planning. In the event of a mass casualty incident, an affected region will respond based on its disaster medical preparedness plan. In the event of a serious incident, regions must have the capacity to raise the alarm and activate the necessary functions, lead and coordinate the relevant health and medical service organisations, carry out medical care interventions in an affected area, perform medical transport and care for those affected at the healthcare unit, and collaborate with other actors at the local, regional and national level.[52]

If an affected region assesses that the resources of its own and neighbouring regions are insufficient to handle the current situation, the region has the option to escalate the handling to the National Board of Health and Welfare to enable national coordination, as set out in the national mass casualty plan. Escalation takes place through contact between the affected region's TiB and the National Board of Health and Welfare's TiB. The basis for the National Board of Health and Welfare's coordination is a national coordination conference focusing on a common situational assessment, a common focus and resource coordination between affected and supporting regions.

In the case of medical transport, there will be a delay in when nationally coordinated resources will be able to assist an affected region due to geographical and time constraints. It is likely that a number of injured

[51] Strengthened national and regional capacity in mass casualty incidents. National Board of Health and Welfare; 2024 and above.
[52] Chapter 4, Section 1 of SOSFS 2013:22, and above.

people will also be spontaneously evacuated from the scene of the accident to the emergency department or other healthcare facilities.[53] An affected region therefore needs to be prepared to handle primary transport in the event of a mass casualty incident. Such preparedness needs to include planning for support from neighbouring regions, as well as how any regional reinforcement resources can be utilised and manned. In this context, it is essential that emergency response centres in different regions have established and practised their ability to work together operationally.

In such case, national coordination will primarily be a matter of coordinating secondary transport and redistribution movements in Phase 2. For this purpose, the National Board of Health and Welfare should have an established mechanism for coordinating resources between affected and supporting regions, coordinating with national and international actors, and activating state/national reinforcement resources.

The regions' and the National Board of Health and Welfare's capacity for coordination was tested during the national disaster medical preparedness exercise KBÖ24 in autumn 2024. The purpose of the exercise was to test the capacity of the healthcare system and the National Board of Health and Welfare to coordinate care resources in the event of a complex disaster with an overwhelming number of casualties. The exercise also aimed to test the regions' ability to provide and receive support from other regions in a disaster situation. Feedback from some regions shows that the National Board of Health and Welfare's responsibility for national coordination in a disaster situation was considered to have worked well. The exercise has also contributed to the further development and implementation of the National Board of Health and Welfare's crisis management plan and crisis management organisation.[54]

A final evaluation of the exercise is expected in May 2025. It is important that the experiences gained from the exercise in terms of national medical transport coordination are subsequently incorporated into the national medical transport coordination plan.

Based on our survey and the KBÖ24 disaster medical preparedness exercise, we assess that, given the existing cooperation structures, the conditions are in place to achieve national medical transport coordination in the event of a peacetime mass casualty incident. Based on the above-described target for

[53] Project "Storstad": A synthesis of disaster medical capacity in Gothenburg, Region Västra Götaland (VGR). National Board of Health and Welfare and VGR; 2007. The term "unplanned evacuations" is sometimes used for the same phenomenon.
[54] Preliminary analysis of the regions' surge capacity in times of peacetime crisis and war. Interim report on the government assignment to analyse, develop and support the regions' ability to increase treatment capacity in times of peacetime crisis, heightened state of alert and, ultimately, war. National Board of Health and Welfare; 2024.

national medical transport coordination, we also assess that there are several measures that would further improve the conditions for such coordination.

Development opportunities based on Scenario 1

We assess that regional, interregional and national coordination of medical transport in the event of a peacetime mass casualty incident would be further strengthened by the following:

- Regions:
  - Integrating medical transport and medical transport coordination into disaster medical preparedness plans, regional mass casualty plans and surge capacity efforts.
  - Ensuring the possibility of operational medical transport coordination with neighbouring regions.
  - Preparing medical orientation decisions and medical prioritisation of medical transport in the event of a mass casualty incident.
  - Inventorying the possibilities of using regional reinforcement resources in crisis situations and including such resources in agreements and contingency planning.
  - Ensuring that the region's emergency response centres have the capacity for cooperation, information exchange and redundancy with other emergency response centres incorporated in their contingency planning, regardless of who is responsible for the centre in question.
- There is a common technical interface between the IT systems of different emergency response centres.
- Within its crisis organisation, the National Board of Health and Welfare is developing a mechanism for coordinating resources between affected and supporting regions, coordinating with national and international actors, and activating state/national reinforcement resources.
- The National Board of Health and Welfare integrates the national medical transport coordination plan into the work to draw up a Nordic mass casualty plan.

Scenario 2 – Protracted peacetime crisis situation

National coordination during a protracted peacetime crisis, such as an epidemic or pandemic, differs from that during a sudden mass casualty incident. Coordination during a protracted crisis corresponds to Phase 3 of our national plan. We see opportunities to achieve national medical transport coordination in such a scenario, but we also want to emphasise the importance of learning from the experiences of coordination established during the COVID-19 pandemic.

During the COVID-19 pandemic in 2020–2023, national coordination was developed in several areas of healthcare, including medical transport. Medical transport coordination consisted of a function for national coordination of transport carried out with the support of the Swedish Maritime Administration's and the Swedish Armed Forces' transport resources, primarily helicopters. The coordination developed from the so-called intensive care coordination and was established in practice by a decision of the regional health and medical care directors.

Sjukvårdens larmcentral in Region Uppsala assumed national responsibility for the operational coordination of the regions' orders for transport by means of the Swedish Maritime Administration's and the Swedish Armed Forces' helicopters. Special teams of healthcare personnel were assembled to man the helicopters. Principles for healthcare provider responsibility during transport, as well as procedures for ordering transport, were developed. The National Board of Health and Welfare and SKR collaborated on the preparatory work required for the coordination to function. A request to the Swedish Armed Forces to assist with medical transport resources was submitted by the National Board of Health and Welfare.[55]

According to the information we have gathered, several of the coordination structures developed during the pandemic have now been dismantled. At present, there is therefore a lack of prepared structures for how national coordination of medical transport would be achieved in a similar crisis situation in the future. The necessary forums for cooperation and channels of communication will therefore need to be re-established based on the conditions prevailing at the time of the next crisis.

However, we believe that the medical transport coordination established during the COVID-19 pandemic will serve as a reference for how similar coordination could be organised in a future crisis situation. The solution in question also highlights the possibility of giving a national assignment to a single emergency response centre operator.

It is essential that the proposed interregional intensive care transport coordination is also established. This can be done using SKR's nationwide cooperation model as a foundation. Otherwise, the National Board of Health and Welfare sees an opportunity to resume work on interregional intensive care transport within the framework of national specialised medical care.[56]

[55] Learning from a crisis: Lessons that municipalities and regions have learned from the COVID-19 pandemic. Chapter 10, Health and medical services. SKR 2023.
[56] A nationwide and regional cooperation model for intensive care transport. SKR 2024. See also page 16.

Development opportunities based on Scenario 2

In our assessment, there are a number of development opportunities that would facilitate the type of medical transport coordination that was established during the COVID-19 pandemic, in the event of a similar crisis situation in the future:

- Harmonisation between the National Board of Health and Welfare and the regions concerning how to prepare, decide and implement necessary measures related to medical transport in the event of a protracted peacetime crisis situation.
- Technical solutions for establishing national situational assessments that are acceptable in terms of confidentiality and security.
- Clearly specify legal conditions for how situational assessments can be shared between various relevant actors.
- Secure meeting and communication channels for the actors who need to be involved in national coordination.

Scenario 3 – Large-scale patient evacuation from our immediate vicinity within the framework of a NATO operation

The national medical transport coordination for large-scale patient evacuation from our immediate vicinity within the framework of a NATO operation corresponds to Phase 3 of our national plan.

NATO's expectations of Swedish health and medical services are based on military operational planning. The healthcare system within NATO is described in a number of policy documents and guidelines. NATO's *Revised ACO Patient Flow Management Guideline* describes a proposed system for large-scale evacuation from a *front-line nation*.[57] According to the proposal, NATO is responsible for evacuating military casualties from the war zone in a front-line nation to a suitable transit country. In the transit country, that country's healthcare system takes over responsibility for the casualties. The respective allied nation is then responsible for collecting and transporting its own injured citizens home from the transit country.[58]

The guideline uses the term *Patient Evacuation Coordination Centre* (PECC) for the management function that coordinates large-scale patient

[57] Reflections from a national seminar exercise in large-scale patient flow management (NSÖ2024) Front-line nations and rear-nations. Swedish Defence Research Agency (FOI) (unpubl) 2024.
[58] Revised ACO Patient Flow Management Guideline; NATO 2024.

management both nationally and internationally and acts as a *single point of contact* for NATO.[59, 60]

The proposal places extensive demands on both NATO and allied nations' systems for transport capacity, coordination and information transfer in the event of large-scale patient evacuation.

Such a scenario was practised in the NATO-led logistics exercise Casualty Move 2024 (CAMO24) in autumn 2024. The exercise was based on NATO guidelines for how large-scale patient evacuation from a military combat zone in a front-line nation in Sweden's immediate vicinity can be carried out.

Based on experiences and preliminary analyses of CAMO24, we see certain opportunities within the framework of our assignment to achieve national medical transport coordination in a similar scenario.[61] However, if we are to meet NATO's expectations, there is an urgent need to establish adequate mechanisms for national civil and civil-military medical transport coordination based on the massive operational effort that may be required. There are already proposals on how a PECC function could be established in Sweden.[62] However, in our assessment, it is uncertain whether such a national coordination function is currently compatible with applicable regulations and preparedness principles.[63] The discussion on which patient flows (civilian, national military, NATO military, and possible prisoners of war) should be handled by such a function also needs to be deepened.[64]

We also see a need to broaden access to reinforcement resources in the event of large-scale patient evacuation, as well as a model for how such resources can be manned and coordinated. In this context, the possibility of using trains and regional buses as reinforcement resources is of particular interest.

There is also a need to inventory the technical systems that can be used to track and monitor evacuated patients (*patient tracking*).

In our assessment, resources and coordination functions developed on this basis will also be usable in other large-scale evacuations during both wartime and peacetime crises.

[59] In some contexts, the term N-PECC is used to emphasise that this is a national coordination function.
[60] Reflections from a national seminar exercise in large-scale patient flow management (NSÖ2024); Swedish Defence Research Agency (FOI) (unpubl) 2024, p. 2.
[61] National seminar exercise 2024 (NSÖ 24): Evaluation report. MSB; 2024
[62] Medical evacuations. Proposal for organisation in Sweden based on NATO. Region Östergötland; 2023.
[63] Strengthened national and regional capacity in mass casualty incidents. National Board of Health and Welfare; 2024 pp. 16–17.
[64] Reflections from a national seminar exercise in large-scale patient flow management (NSÖ2024); Swedish Defence Research Agency (FOI) 2024, p. 3.

Development opportunities based on Scenario 3

Our assessment is that Sweden needs to strengthen its capacity for large-scale patient evacuation in order to meet NATO's expectations.

We see a need for:

- A national civil or civil-military mechanism for national medical transport coordination in the event of large-scale patient evacuation.
- A cohesive, prepared and dimensioned system for how medical transport reinforcement resources can be made available, coordinated and manned.
- A technical solution for tracking and monitoring patients who are evacuated during large-scale patient evacuation within the framework of a NATO operation (*patient tracking*).

Scenario 4 – Armed attack against Sweden with military and civilian casualties

National medical transport coordination in the event of an armed attack against Sweden corresponds mainly to Phase 3 of the national plan, with a significant focus on civil-military coordination issues. More specifically, the need for operational civil-military medical transport coordination, prioritisation between civil and military medical transport needs, and a functioning civil-military medical care chain will be brought to the fore in several respects. Conditions are likely to vary in different parts of the country, and coordination corresponding to Phases 1 and 2 of the national plan will probably also need to be activated to varying degrees in different parts of the country.

Above all, it can be assumed that the situation will be characterised by very large medical transport needs, the need to be able to redistribute patients between different geographical areas or parts of the country, large-scale use of reinforcement resources, various restrictions in terms of infrastructure, airspace and information transfer, and generally extreme conditions.

The care of military and civilian casualties in a combat zone is carried out as set out in the planning of both the Swedish Armed Forces and NATO, in a chain of medical care capabilities and medical transport from the combat zone to the appropriate military or civilian level of care.[65] The Swedish Armed Forces need to be able to perform medical care tasks in the combat zone.[66] In wartime, there is limited potential to deploy civilian operations in combat zones. The Swedish Armed Forces therefore also need to be responsible for evacuations and medical transport from the combat zone. It

[65] Function chain for healthcare, Swedish Armed Forces (unpubl).
[66] Health and medical services in civil defence: basis for defence policy orientation (SOU 2020:23). Ministry of Health and Social Affairs 2020.

is desirable for the transport of patients to civilian health and medical service facilities to take place without transfers as far as possible.[67] If transfers are nevertheless necessary, there should be an established and practised system for setting up ambulance exchange points (AXP)[68] between military and civilian medical transport.

To limit the harmful effects of an armed conflict on Swedish soil, civil-military joint planning and cooperation are required in order to both create and utilise capabilities in areas such as medical transport. Joint planning and cooperation need to take place at all organisational levels within the total defence healthcare system. Systems and procedures for effective medical transport coordination also need to be established.[69] As in Scenario 3 above, we see a need to ensure which reinforcement resources can be used for such large-scale patient evacuation, and how such resources can be manned and coordinated.

Within total defence health and medical services, cooperation processes and joint civil-military planning are currently underway at several levels of the preparedness system. The government's assignment to the Swedish Armed Forces and the National Board of Health and Welfare to further develop cooperation between military operations and civilian health and medical services strengthens the conditions for joint planning and cooperation within total defence's health and medical services. It is also necessary to ensure that NATO's expectations of Swedish healthcare are taken into account in Swedish total defence planning.

Through the civil defence area structure, corresponding cooperation has been created at a higher regional level. The work on key figures and dimensioning targets clarifies the planning conditions for regional health and medical services in wartime. This work also contributes to strengthening cooperation between regions and military regions on issues relating to health and medical services within the civil defence area structure.

Medical transport is a crucial part of the civil-military medical care chain, and it is essential that issues relating to medical transport and medical transport coordination are taken into account in the ongoing civil-military cooperation.

[67] Health and medical services in civil defence: basis for defence policy orientation (SOU 2020:23). Ministry of Health and Social Affairs 2020.
[68] NATO STANDARD AMedP-7.2. NATO 2018.
[69] National and Regional Medical Transport Management – A civil-military network for seamless effectiveness in peacetime, crisis & war. Swedish Defence University (FHS); 2024.

Development opportunities based on Scenario 4

In our assessment, the cooperation processes that are underway to develop civil-military cooperation are appropriate, including from a medical transport perspective. However, we consider the existing structures for effective civil-military cooperation as relates to medical transport to be insufficient at present. We therefore find that national medical transport coordination in times of heightened alert and war needs to be developed within the framework of ongoing cooperation processes.

The conditions for civil-military coordination as relates to medical transport can be further strengthened by:

- Regions and other actors integrating medical transport into their work with key figures and dimensioning targets.
- Developing a system for how *liaison officers* from the Swedish Armed Forces can work in civilian emergency response centres in times of heightened alert and war to enable operational civil-military medical transport coordination.
- Developing a national civil-military concept for ambulance exchange points for medical transport, and implementing this in the regions' contingency planning.
- Further investigating the issue of prioritisation between civilian and military medical transport needs in times of heightened alert and war.
- Integrating NATO's terminology with civilian and military terminology as relates to medical transport.

How can the national plan be implemented?

The proposed national medical transport coordination plan has been developed in collaboration with representatives from regions and national actors working in the field of medical transport. Current regulations and preparedness principles have also been taken into account in the development of the proposal.

In some respects, the plan consists of clarifications of existing conditions for national coordination. This applies primarily to Phases 1 and 2. These sections also contain established mechanisms for how the transition to each phase should be "triggered" in relation to the previous one (cf. row 3 in the matrix in Appendix 2). In our assessment, these parts of the plan are already applicable today. We have also identified a number of measures that we believe further strengthen the possibilities for national coordination in Phases 1 and 2.

For Phase 3 of the national plan, additional investigative efforts or other measures are required in order to achieve effective coordination. This applies in particular to Sweden's ability to act as a transit country in the event of large-scale patient evacuation from our immediate vicinity within the framework of a NATO operation.

Several effective cooperation processes are underway in the area of civil-military cooperation and planning in the health and medical services sector in preparation for states of heightened alert and war. These need to continue, and medical transport needs to be integrated into the respective processes. The development opportunities that we have identified in this work focus on more tangible aspects of civil-military cooperation as relates to medical transport.

Supply of information to the national plan

Prerequisites

Better information sharing is required for medical transport coordination

The actors responsible for prioritising and dispatching medical transport use different technical systems for information management, communication and management. These technical systems lack the ability to provide a comprehensive national situational assessment on which to base joint management of societal disruptions.[70] In crisis situations that require national coordination, it is essential that the systems are able to communicate and share information. It is also important that communication between pre-hospital emergency care, authorities and organisations functions effectively.

In collaboration with one of the external reference groups that included representatives of the Swedish Armed Forces, it has emerged that the Swedish Armed Forces may have an interest in accessing the national situational assessment. Such sharing is also recommended by NATO.[71]

A shared understanding of data is crucial

National medical transport coordination requires the gathering of information from various sources, such as weather data, map data and transport vehicle data. To avoid misunderstandings and incorrect decisions, it is important that all parties involved have a common understanding of the data being shared. Using different terms or definitions for the same data could lead to misunderstandings.

Emergency response centre systems are key

Our survey of IT systems shows that emergency response centre systems are the most important source of information for real-time updates on road ambulances and certain ambulance helicopters. However, there continue to be challenges in obtaining up-to-date information on alternative transport resources in relation to specific incidents. Another challenge is the creation

[70] SOU 2018:28 *A national emergency alert service – for fast, safe and effective emergency response.*
[71] NATO AC/237-D (2024)0001 – The NATO Response System (NRS) Response Measures.

of uniform reports on the need for assistance in order to facilitate coordination.[72]

Restrictions on data sharing

SOS Alarm has agreements with most regions regarding the prioritisation and dispatch of medical transport that regulate SOS Alarm's ability to share regional data. These agreements currently restrict SOS Alarm's ability to share regional data. To enable national coordination, the regions' data needs to be more accessible. This requires an investigation into possible legal measures, such as introducing an obligation for the regions to share data.

Framework for cooperation exists – but challenges remain

The Swedish Civil Contingencies Agency (MSB) has developed a framework, *Common ground – framework for management and cooperation*.[73] This framework is intended to facilitate cooperation by sharing situational assessments and achieving a common focus and coordination before and during societal disruptions in times of peace and heightened alert. Despite this, many challenges remain, particularly with regard to effective information exchange and cooperation.

Need for an overall situational assessment

Our survey has revealed that there are established procedures and preparedness for regional coordination of medical transport. In many cases, there are also procedures for requesting resources from neighbouring regions. However, there is no national situational assessment of medical transport in the event of a major crisis or incident. The purpose of an overall situational assessment is to provide an up-to-date overview of transport resources linked to incidents, as well as which resources are available and which are needed. The situational assessment can form the basis for needs assessment and resource matching at the national level.

[72] SOU 2022:6 *Preparedness of the healthcare system – structure for increased capacity*.
[73] Swedish Civil Contingencies Agency, "Common ground – framework for management and cooperation" (2024), https://www.msb.se/sv/amnesomraden/krisberedskap--civilt-forsvar/gemensamma-grunder--ramverk-for-ledning-och-samverkan/ (Retrieved 9 December 2024).

Proposal for digital support for medical transport coordination

To meet the need for a national situational assessment of medical transport resources, the Swedish eHealth Agency proposes digital support that builds on the national digital infrastructure.[74] This digital support should be developed iteratively based on an in-depth analysis of user needs. It is proposed that the support be expanded as more parts and components of the national digital infrastructure are completed.

The proposal aims to support the coordination conference in Phase 2 of the national medical transport coordination plan, when an affected region escalates the management of a crisis situation in its own region to the national level. The proposal is not intended to replace the systems used to dispatch medical transports, but to serve as a complement.[75]

The digital support will assist in the work of creating and sharing comprehensive national situational assessments. The support will simplify the process of collecting and visualising data on the special incidents that require the coordination of medical transport, as well as the measures taken to manage them.

The actors involved can contribute their situational assessments through both automatic transfer and manual registration. The information is displayed to those who have authorisation so that all parties involved can follow the process. The system displays information in real time and contains up-to-date information on the current situation, but can also be used to view information on previous incidents.

Proposed content of the national situational assessment

MSB's framework for management and cooperation defines an overall situational assessment as an overview of:

- The incident itself and any developments.
- Which actors are involved.
- The actors' resources and operations.

[74] Swedish eHealth Agency (2024), Proposed roadmap for the implementation of a national digital infrastructure for health and medical services. Final report S2023/02108. Reg. No 2023/02689.
[75] Appendix 2 – Proposal for a national medical transport coordination plan.

To support a national situational assessment, a digital system is proposed that enables the actors concerned to:

- View information about current incidents.
- Get an overview of the need for support from affected regions.
- See offers of support from other regions.
- Access other relevant information.

Above all, the situational assessment should provide clear information about available transport resources as follows:

- The incident: What happened and the causes, based on both the type of incident and the area in which it occurred.
- Consequences: The immediate effects of the incident, such as the number of dead, sick or injured.
- Current resources: Real-time resource situation for road ambulances, ambulance helicopters, ambulance airplanes – for example, resources on site and resources en route to the general area of the incident.
- Resource requirements: What and how many medical transport resources are needed.
- Resources offered: What medical transport can be offered, and in what numbers.
- Measures: What measures have been taken and what is planned, as well as time frames for this in relation to medical transport.
- Actors: Who is involved in the incident.
- Other: Geodata and other important information, such as weather conditions, traffic status, electricity and telecommunications networks, and information about nearby hospitals.

The legal basis for the proposed national situational assessment is that it will not contain any personal data or information that may be subject to confidentiality. If further development of the function or similar results in the situational assessment containing personal data or information subject to confidentiality, a legal analysis must be carried out of the conditions for processing this data in the function.

Actors contributing information to the national situational assessment

Emergency response centres contribute by sharing real-time information about incidents, ongoing operations and available medical transport resources, while the affected region manually registers the need for assistance and supporting regions manually register the resources they can offer. With regard to the intended provision of information, this may need to be regulated legally through a duty to disclose for the actors listed.

Geospatial data can be shared via services offered by Lantmäteriet and the Swedish Civil Contingencies Agency, and in some cases from emergency response centres. If such data is to be used, the conditions may need to be examined more closely from a legal perspective.

Prototype – digital support

The proposed solution has been concretised with a prototype developed in an iterative process. The prototype illustrates a possible design for the digital support, with functions and content that are considered to create value for the intended users. The prototype visualises the solution and also serves as a tool for gathering feedback and testing functionality and usability at an early stage.

Description of the interface

The following description is an abridged version. For a more comprehensive description, see Appendix 4.

The overall situational assessment at the national level is displayed on the home page in the form of an interactive map. By selecting different filters, users can view an aggregated view of the country's available medical transport resources, ongoing incidents requiring national coordination, hospitals, and other types of data that also contribute to the overall situational assessment. This includes, for example, information about incidents, weather, roads, and power grid disruptions.

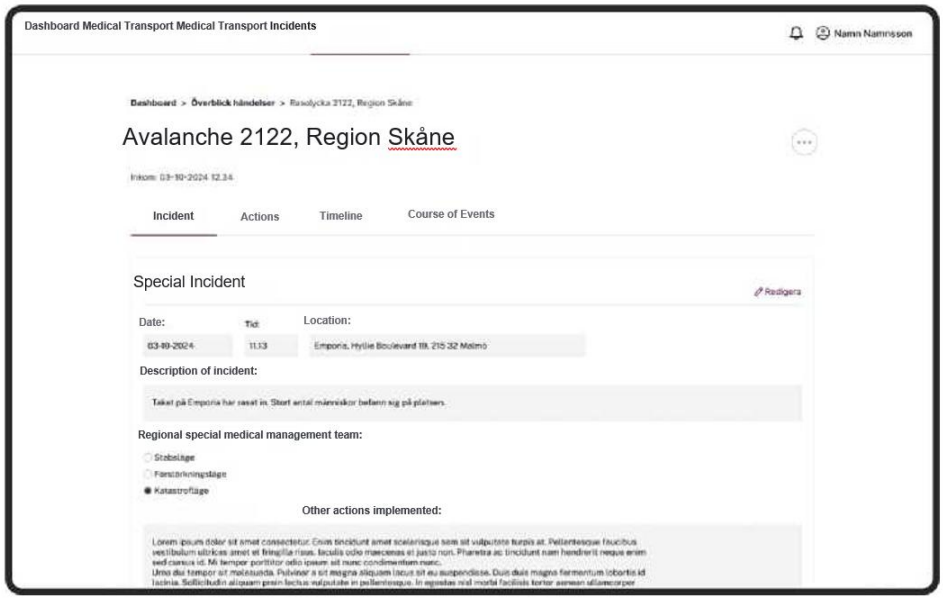
Figure 3. Home page in the form of an interactive map with the road ambulance filter activated

From the map or via the main menu, you can access two categories with subpages: "Medical Transport" and "Incidents". The country's medical transport resources are listed under the "Medical Transport" tab, categorised

by transport type and operator. Transports are also divided according to the region to which they belong.

Ongoing and past incidents that require or required national coordination are listed under the “Incidents” tab. Each individual incident has a subpage with information about the incident, the number of injured persons and resource requirements. There is also information about measures implemented and the course of events related to medical transport and evacuation of the injured. Further investigation is required in relation to which data sources should be used in connection with the course of events.

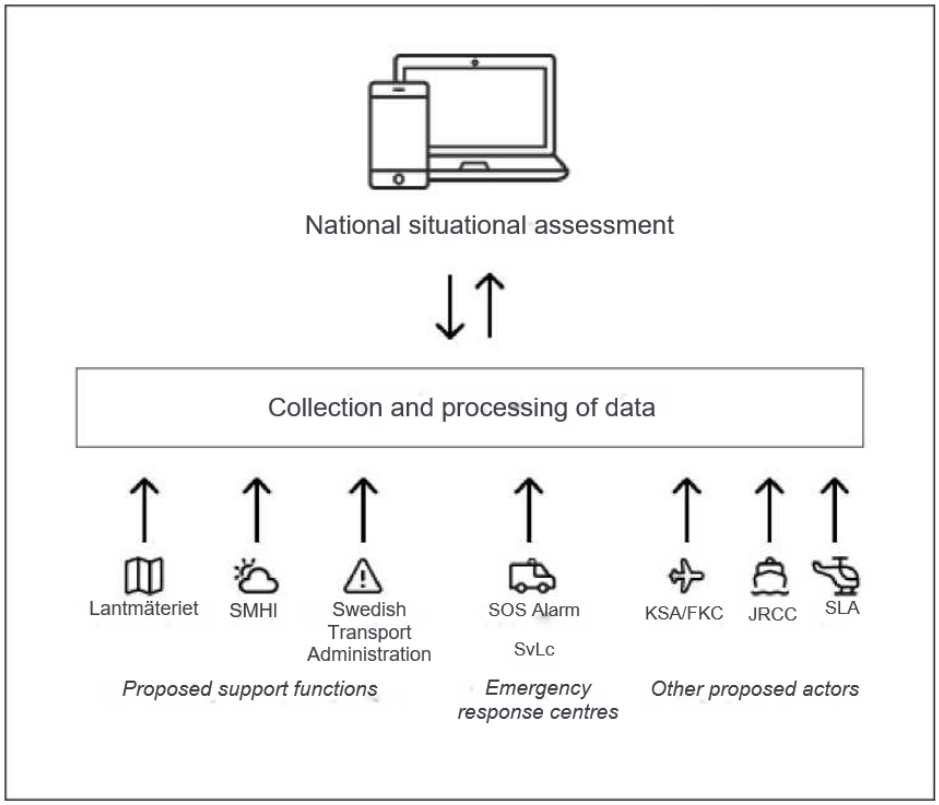
Figure 4. The first tab in “Incidents”, where the user can get an in-depth picture of what happened



Conceptual solution

The Swedish eHealth Agency proposes that digital support for coordinating medical transport be implemented through a data-driven solution. The solution is based on automated collection and aggregation of information from emergency response centres and other data sources, and could be supplemented with data from relevant regions as needed. The collected information is visualised in the digital support in the form of a current situational assessment of the situation in the regions concerned, as shown in Figure 5.

Figure 5. Conceptual data-driven solution



The solution is proposed to be built iteratively and, where applicable, based on components from the national digital infrastructure.[76, 77]

Factors to consider when developing the digital support

The digital support solution should be developed in stages and in close collaboration with users. Through continuous needs analyses, the support can be gradually improved with more information and functions that support the focus and coordination of medical transport.[78]

[76] Swedish eHealth Agency (2024), Proposed roadmap for the implementation of a national digital infrastructure for health and medical services. Final report S2023/02108. Reg. No 2023/02689.
[77] Appendix 6 Prototype and conceptual solution.
[78] Swedish Civil Contingencies Agency, Joint work between actors – Process for achieving a common focus and coordination between actors (2024), https://rib.msb.se/filer/pdf/30889.pdf (Retrieved 9 December 2024).

Security and robustness

Security aspects need to be investigated further to establish requirements for:

- Protection of security-classified data.
- Robustness and redundancy in the system.

An important question is how new services on Rakel G2 will affect the digital support. If a digital support solution is developed, it is important to participate in MSB's testing activities to investigate how Rakel G2 can contribute with new technology to improve the flow of information.[79]

Data sharing

Our proposed solution is based on real-time data for medical transport resources. SOS Alarm has agreements with several regions regarding the prioritisation and dispatch of medical transport that regulate data sharing. Current agreements limit SOS Alarm's ability to share regional data. To enable national coordination, the regions' data must become more accessible, which may need to be investigated through legal measures such as introducing an obligation for the regions to share data.

Interoperability

Issues relating to standardisation and interoperability should be handled by the national interoperability function at the Swedish eHealth Agency. The work should cover legal, organisational, semantic and technical aspects and follow the eHealth Agency's processes. The work should also be adapted to the upcoming EU legislation on the European Health Data Space (EHDS) and standards used by NATO.

The finished solutions should be reviewed and assessed to become national and common e-health specifications (NGS).

[79] Swedish Civil Contingencies Agency, "Development of the next generation communication system" (2024), https://www.msb.se/sv/amnesomraden/informationssakerhet-cybersakerhet-och-sakra-kommunikationer/sakra-kommunikationer/utveckling-av-nasta-generations-kommunikationssystem/ (Retrieved 9 December 2024).

Personal data

In the future, the support may be developed to include patient data, for example to share patient overviews or for *patient tracking*. Sweden's membership in NATO brings with it new requirements for health and medical services, such as the management of patient flows and tracking.

If the support is to handle personal data or confidential information, a legal analysis is required of the conditions for processing this data.

Expanded datasets

During the investigation, several new datasets and functions have been identified that could be included in the future:

- More actors could contribute situational assessments regarding air ambulances, such as Kommunalförbundet, Svenskt Ambulansflyg and Svensk Luftambulans.
- Alternative transport resources, such as civilian vehicles and reinforcement resources from the emergency services and the police.
- The ability to configure the system, as it may be necessary to change the information collected depending on the incident.
- Functionality to handle, for example, video and images from drones in area of the incident.
- Situational assessment of waiting times for operations and, in time, available patient care spaces.
- Ability to make forecasts or simulate crises and exercises using secondary data.
- Catalogue of administrative information, such as contact details of various health and medical care actors to facilitate operational coordination. Requires continuous updating.

Cost estimates

Proposal for a national medical transport coordination plan

According to the National Board of Health and Welfare's assessment, the proposed measures relating to regions and the National Board of Health and Welfare do not entail any new commitments for the respective actors. They instead represent clarifications within current areas of responsibility.

The National Board of Health and Welfare assesses that the proposed measures that require follow-up investigations may entail costs. Cost estimates can then be made within the framework of such additional assignments.

Supply of information to the national plan

The solution is largely based on components from the national digital infrastructure for health, medical care and welfare. Other government assignments related to the national digital infrastructure are ongoing, which means that components may need to be replaced.

Costs are expected to arise for the Swedish eHealth Agency in connection with the development, provision and management of "national situational assessment" and associated services, specifications and documentation. The estimate does not include costs arising from connection to the situational assessment or from information providers.

For a better estimate of integrations with information providers, an in-depth analysis of both the costs and time required for further adaptations by the information providers is needed.

Table 1. The Swedish eHealth Agency's estimated costs (in SEK thousands) for investigation, development and life cycle management

Estimated costs	Development, 12 months	Annual administration
Governance, communication, legal and security	2 900	950
Authorisation and identity	800	350
Development of situational assessment, version 1	9 500	1 900
Needs analysis design, version 2	950	
Infrastructure service		1 000
Integrations with information providers*	8 500	1 900
Amortisation		2 400
Total**	**22 650**	**8 500**

* The costs for integrations are rough estimates and are based solely on the technical solution. For some of the parties, it is not possible to provide information with the current organisational structure, and for some of the other parties, it may be necessary to draw up agreements that could change the cost estimate both upwards and downwards.
** Of the development costs, SEK 12,200,000 is estimated to be an investment financed by loans, which will then be recouped as amortisation in the annual administration.

Development costs primarily relate to human resources for e.g. project management, requirements specification, development, testing, investigation, design and establishment of the technical environment.

Management costs relate to costs for IT operations and component support, as well as costs for long-term management of the service. These costs may increase over time if the functionality, needs and use of the service develop and change.

Conclusions and priority measures

In this report, the National Board of Health and Welfare and the Swedish eHealth Agency have presented a survey of resources and organisations for medical transport. Based on the survey, and taking into account the various conditions for national coordination in the health and medical services sector, we have described a target scenario for medical transport, reinforcement resources and medical transport coordination, as well as a proposal for a national coordination plan in three different time phases. We have described how the national plan can be used based on four different type scenarios. We have also described how the national plan can be supplied with information using the national digital infrastructure as a building block, and illustrated the information supply using a prototype for situational assessment of medical transport. Cost estimates for the development of an IT solution that corresponds to the prototype have also been presented.

We have drawn the following conclusions from our work on the government assignment:

- The conditions and need for national coordination of medical transport and reinforcement resources vary in different crisis and war scenarios.
- There are several different types of medical transport and reinforcement resources in Sweden, but no coordinated national dimensioning of the collective transport resources based on the needs that may arise in crisis or war.
- New concepts for medical transport reinforcement resources need to be developed, and current regulations need to support such development.
- Sweden’s medical transport coordination system needs to be integrated with corresponding systems in the Nordic countries, NATO, the EU and the WHO.
- There is a need for a national digital situational assessment for medical transport in crisis situations or incidents involving multiple regions. An in-depth needs analysis and iterative development based on user needs are needed to develop a situational assessment.
- Civil-military cooperation with regard to medical transport needs to be deepened, concretised and based on common principles.
- Conditions are needed for nationally uniform medical priorities in relation to medical transport.
- Interoperability (legal, organisational, semantic and technical) as relates to medical transport needs to be strengthened, both between different types of medical transport and between emergency response centres.

In conclusion, we would like to summarise the measures we consider to be priorities for achieving continued development in terms of national medical transport coordination.

Measures that fall under the responsibility of the regions

- Integrate medical transport and medical transport coordination into:
  - disaster medical preparedness plans
  - regional mass casualty plans
  - surge capacity efforts
  - work on key figures and dimensioning targets.
- Ensure the possibility of interregional medical transport coordination in a crisis situation.
- Prepare medical orientation decisions and medical prioritisation of medical transport in a crisis situation.
- Inventory the possibilities of using and manning regional reinforcement resources in a crisis situation, and include such resources in agreements and contingency planning.

Measures that fall under the responsibility of the National Board of Health and Welfare

- Within the National Board of Health and Welfare’s crisis organisation, develop a mechanism for coordinating resources between affected and supporting regions, coordinating with national and international actors, and activating state/national reinforcement resources.
- Integrate the national medical transport coordination plan into the work to draw up a Nordic mass casualty plan.

Measures that fall under the responsibility of the Swedish eHealth Agency

- Identify the support needs of actors through in-depth needs analysis.
- Gradually develop the digital support to include more datasets and functions for national medical transport coordination, as more parts and components of the national digital infrastructure are completed.

Measures requiring further investigation

- Develop a civil or civil-military national medical transport coordination function for large-scale patient evacuation within the framework of a NATO operation. It should be possible to integrate the function into the Swedish preparedness system. The proposed function should take into account experiences of similar coordination within NATO-allied countries and should also include a technical solution for tracking and monitoring evacuated patients (*patient tracking*).
- Develop a cohesive national system for medical transport and reinforcement resources. The system must be dimensioned based on war and NATO's expectations of Sweden as a transit country for large-scale patient evacuation from our immediate vicinity. The proposed system should include the manning of reinforcement resources, as well as regulatory issues (withdrawal, disposal, type approval of converted vehicles). The proposal may also encompass a future role and function for Svenska Nationella Ambulansflyget.
- Develop a Swedish concept for ambulance trains.
- Develop knowledge support or other conditions for nationally uniform medical orientation decisions and medical priorities in relation to medical transport. Such work should include priorities between civil and military medical transport needs.
- Develop a system for how *liaison officers* from the Swedish Armed Forces can work in civilian emergency response centres in times of heightened alert and war.
- Develop interoperability as relates to medical transport:
  - A common technical interface for transferring data between the IT systems of different emergency response centres, as well as from different emergency response centres to a national situational assessment.
  - Harmonised terms, concepts and definitions related to medical transport in the civil, civil-military and NATO contexts.
  - Uniform medical equipment in medical transport based on nationally agreed standards.

Appendix 1. Medical transport in Sweden in times of crisis and war – Surveys and international outlook

On 13 January 2025, the National Board of Health and Welfare assessed that the report on the survey part of the government assignment (Appendix 1, Surveys and international outlook) was subject to confidentiality under Chapter 18, Section 13 of the Public Access to Information and Secrecy Act.

Appendix 2. Medical transport in Sweden in times of crisis and war – Proposal for a national medical transport coordination plan

Proposal for a national medical transport coordination plan

	Phase 1	Phase 2	Phase 3
What kind of coordination is envisaged?	Regional (affected region) and interregional (neighbouring regions)	National International (primarily Nordic)	National International (Nordic and European)
What does coordination involve?	Coordination in accordance with the affected region's emergency preparedness plan and regional mass casualty plan Operational ambulance cooperation with neighbouring regions National coordination of severe burns	Initiation of a national coordination conference Establishment and communication of a national situational assessment Resource coordination between affected and supporting regions	Medical transport coordination required based on the specific situation
How is coordination initiated?	Regional TiB[1)] initiates local/regional special medical management team (SSL) If necessary, contact between regional TiB and TiBs of neighbouring regions In accordance with emergency alert plan for severe burns[2)]	Regional TiB or SOS Alarm contacts the National Board of Health and Welfare's TiB The National Board of Health and Welfare's TiB initiates national cooperation	In consultation with the national actors involved, based on established coordination structures
Who is responsible for establishing, continuously adapting and subsequently terminating coordination?	Affected region	National Board of Health and Welfare (via TiB/coordination conference)	In consultation with the national actors involved, based on established coordination structures
Which actors are involved in the coordination?	Affected region Neighbouring (supporting) regions	Affected region Supporting regions (neighbouring and other) National Board of Health and Welfare Other actors, permanent or as needed, e.g. KSA[3)]	National Board of Health and Welfare plus other actors depending on the specific situation

	Phase 1	Phase 2	Phase 3
How are operations and resource utilisation coordinated?	Through decisions by local/regional special medical management team	Through national coordination of the affected region's needs and the supporting regions' ability to assist through a mechanism established for this purpose by the National Board of Health and Welfare	In consultation with the national actors involved, based on established coordination structures
Which actors have decision-making authority in this regard?	Both affected and neighbouring (supporting) regions have control over their own resources	All actors retain control over their own resources	All actors retain control over their own resources
Which actor is responsible for prioritisation and dispatch of medical transport (i.e. emergency response centre operations)?	Emergency response centre in affected region Cooperation with emergency response centres in neighbouring regions In some regions also JRCC[4)]	Emergency response centre in affected region Cooperation with emergency response centres in neighbouring regions Possibly also FKC[5)], JRCC	Possibility of assigning national responsibility for prioritisation and dispatch to individual emergency response centre operators
Who is responsible for creating and communicating a situational assessment?	Affected region	National Board of Health and Welfare	Depends on what kind of situational assessment is required based on the specific situation
What does the situational assessment contain?	What is specified in the region's crisis preparedness plan, or alternatively according to decisions made by the local/regional SSL	Overview of the affected region's needs and the supporting regions' ability to assist Possible further development in accordance with eHealth Agency's prototype	Depends on what kind of situational assessment is required based on the specific situation
What actors contribute information to the situational assessment?	Pre-hospital medical management Emergency response centre in affected region	Affected region Supporting regions Emergency response centres	Depends on what kind of situational assessment is required based on the specific situation

	Phase 1	Phase 2	Phase 3
	Emergency response centres in neighbouring regions Local/regional SSL	Possible further development in accordance with eHealth Agency's prototype	
To which actors should the situational assessment be communicated?	Within local/regional special medical management team To actors in affected region	To the actors participating in the national coordination conference	Depends on which actors need the situational assessment based on the specific situation
Who is responsible for creating and communicating a common focus?	Local/regional SSL in affected region	National Board of Health and Welfare through cooperation within the framework of a national coordination conference	In consultation with the national actors involved, based on established coordination structures
What should the common focus cover?	Medical policy decisions and priorities Distribution of patients within the region/to other regions through ambulance coordination	Approach to resource coordination between affected and supporting regions	Depends on what kind of situational assessment is required based on the specific situation
Who is responsible for contact with MSB?	-	National Board of Health and Welfare	National Board of Health and Welfare
Who is responsible for contact with the Red Cross?	-	National Board of Health and Welfare	National Board of Health and Welfare
What international cooperation could be relevant?	Established cross-border Nordic ambulance cooperation in the regions concerned	Nordic (Nordic Public Health Preparedness Agreement, Nordic Burn Mechanism) European (ERCC)	Nordic (Nordic Public Health Preparedness Agreement, Nordic Burn Mechanism) European (ERCC) WHO
Who is responsible for international cooperation?	Affected region	Nordic cooperation: National Board of Health and Welfare (TiB) European (ERCC): MSB[6)]	Nordic cooperation: National Board of Health and Welfare (TiB) European (ERCC): MSB

	Phase 1	Phase 2	Phase 3
How does civil-military cooperation take place in a peacetime crisis?	Based on established regional procedures Through a request	Through a request	Through a request
How does civil-military cooperation take place in a state of heightened alert?	Based on established regional procedures	Based on established national procedures	Based on established national procedures
How does cooperation with the Swedish Maritime Administration take place?	Based on established regional procedures	Coordinated cooperation at the national level	Coordinated cooperation at the national level
Who is responsible for directing and coordinating communication to the public and those affected?	Affected region	Affected region locally National Board of Health and Welfare nationally	Affected regions locally National Board of Health and Welfare nationally

1) Official on standby (tjänsteman i beredskap)
2) National specialised medical care for severe burns – Emergency alert plan and national coordination. Region Östergötland 2022
3) Kommunalförbundet Svenskt Ambulansflyg
4) Joint Rescue Co-ordination Centre
5) Flygkoordineringscentralen Svenskt Ambulansflyg (Flight Coordination Centre of Svenskt Ambulansflyg)
6) Swedish Civil Contingencies Agency

Appendix 3. Medical transport in Sweden in times of crisis and war – Survey of information supply

Survey of information supply to the national medical transport coordination plan

Data sources and situational assessments

This section describes information sources containing data that, individually or in combination with other sources, can be used to produce situational assessments. The actors involved in medical transport currently use several different IT systems. In order to supply information for the national coordination of medical transport, a survey of these systems has been carried out together with the relevant actors, including an inventory of datasets. This section provides an overview of the systems for communication, management, control and dispatch of medical transport, as well as their use in national crisis management.

Rakel

Rakel (RAdioKommunikation för Effektiv Ledning, or Radio Communication for Effective Management) is Sweden's national radio communication system, used by more than 650 public sector actors, including the police, emergency services, healthcare and the armed forces.[80] The infrastructure is owned by the Swedish state, and MSB is responsible for the operation, management and development of Rakel.

The infrastructure is robust, with a high level of operational reliability and backup power for longer outages. Communication is encrypted, which protects against interception. It can also be used for various services such as positioning, alarm transmission and direct communication between terminals without network support. The system can be used both in everyday

[80] MSB About Rakel, https://www.msb.se/sv/verktyg--tjanster/rakel/om-rakel/

situations and in crisis and war situations. Rakel is primarily designed for voice communication.

The most common method of communication in Rakel is via group calls, which take place in call groups. A call group can be likened to a conference call, or what in an analogue radio system is called a channel 17. Group calls are an effective way to reach a group of individuals simultaneously, for voice, SDS and status messages.

Within healthcare and emergency services, different call groups are used in Rakel. Communication between control centres and ambulances takes place not only via voice, but also via various text/data messages. In this way, position and status can be easily shared.

Rakel G2

To meet new needs and requirements, development and establishment of the next generation of Rakel – Rakel G2 – is currently underway.[81] In addition to the functionality available in today's Rakel, the next generational will have functionality for video, change, exchange of location information, access to WIS (see below) and more. Rakel G2 is expected to have a high level of security and to work with SGSI[82] (Swedish Government Secure Intranet, see below).

CoordCom

CoordCom is a platform for SOS Alarm[83, 84] that handles call reception, communication, case management and alarm dispatch. SOS Alarm handles the dispatch and prioritisation of medical transport, either wholly or in part, in 17 of 21 regions.

SOS Alarm's case management and communication system, Zenit[85], integrates case management, map support and communication (Rakel, data and telephony). Zenit supports the entire alarm handling chain: receiving incoming calls, communication, dispatching/logistics, alarm dispatch and information relay.

CoordCom is scalable and can handle configurations for individual users to systems with hundreds of users with high availability requirements. There are integrated functions for telephony, digital radio and data communication,

[81] MSB, Development of the next generation communication system, https://www.msb.se/sv/amnesomraden/informationssakerhet-cybersakerhet-och-sakra-kommunikationer/sakra-kommunikationer/utveckling-av-nasta-generations-kommunikationssystem/
[82] MSB, About SGSI, https://www.msb.se/sv/verktyg--tjanster/sgsi/om-sgsi/
[83] CoordCom, Omda CoordCom, https://omda.com/solutions/emergency/omda-coordcom/
[84] SOS Alarm, Home page – SOS Alarm, https://www.sosalarm.se/
[85] SOS Alarm, Customise your alarm management, https://www.sosalarm.se/tjanster/alla-tjanster/plattform-for-larmhantering/

processes and systems. It is also possible to include video, location data, photos, images and real-time text.

For high reliability, there is functionality for continuous operation. This function allows parallel systems to be run, where maintenance and updates can be carried out in one system while the other continues to function as normal. Expansion and adaptation are also underway to meet the requirements for operating as part of the total defence system.

SOS Alarm has the ability to share information unidirectionally with other actors as needed via their distribution system Zered. This allows the actors concerned to visualise the information they need in their own management systems. Zered is a system for subscribing to incident information from SOS Alarm.

CoordCom is used by several other organisations in Sweden, including JRCC/Swedish Maritime Administration[86] (NILS system), Svenskt Ambulansflyg[87] and others.

Alitis

Alitis Command Control is a technical platform developed by the system supplier Alecom AB[88] on behalf of four regions: Region Uppsala[89], Region Värmland[90], Region Sörmland[91] and Region Västmanland[92]. These regions jointly operate Sjukvårdens larmcentral (SvLc). The system includes positioning of resources, time, location, illness/injury, incident and cooperation with other actors, and consists of the following modules: case management, telephony, radio (integration with Rakel), clinical decision support (CDS) and map functions.

MBS supports nurses in their medical assessment during the care interview, during which documentation also takes place. During the care interview, in addition to a medical assessment, the nurse also assesses the priority of the case so that the patient is referred the right mode of transport and level of care.

[86] JRCC, Joint Rescue Coordination Centre (JRCC), https://www.sjofartsverket.se/sv/sjo--och-flygraddning/sjo--och-flygraddningscentralen-jrcc/
[87] Svenskt Ambulansflyg, Home page – Svenskt Ambulansflyg, https://www.svenskt-ambulansflyg.se/
[88] Alecom, Alecom, https://www.alecom.se/
[89] Region Uppland, Sjukvårdens larmcentral | Uppsala University Hospital, https://www.akademiska.se/for-vardgivare/verksamhetsomraden/ambulanssjukvard/larmcentral/
[90] Region Värmland, Region Värmland, https://regionvarmland.se/
[91] Region Sörmland, Sjukvårdens larmcentral – SvLc – Region Sörmland, https://regionsormland.se/om-region-sormland/organisation/verksamhetsomrade-halso--och-sjukvard/ambulanssjukvarden-sormland/sjukvardens-larmcentral/
[92] Region Västmanland, Sjukvårdens larmcentral – Region Västmanland, https://regionvastmanland.se/vardgivare/avtal-och-samverkan/sjukvardenslarmcentral/

WIS – Web-based Information System

WIS is a web-based system developed by MSB to share information and situational assessments before, during and after societal disruptions.[93] WIS can also be used for monitoring the external environment. The system is used by authorities, municipalities, regions, volunteer organisations and private actors within Sweden's civil preparedness. WIS offers functions that facilitate cooperation and coordination. The system enables the collection and analysis of information for a shared situational assessment, as well as easy sharing of documents, images, maps and other information, both between actors and within an organisation. WIS is used at the local, regional and national levels. Each actor controls their own information and decides with whom it is shared, including the option to restrict sharing within their own organisation. WIS is also used for operational information, where actors in the RAKEL system can monitor and detect planned or unexpected outages. Confidential information is not handled within WIS.

MSB RIB Lupp

MSB RIB Lupp is a decision support tool for managing and monitoring rescue operations, primarily aimed at Swedish municipal rescue services.[94] It is used to collect, analyse and disseminate information about operations, resources and situational assessments in the event of accidents and crises. The system helps to create a common operational situation assessment that facilitates coordination and decision-making between different actors, such as municipalities, authorities and rescue services.

With LUPP, users can quickly report incidents and responses, providing a real-time overview of ongoing and completed operations. The system also offers support for analysis and follow-up, helping actors to evaluate previous operations and improve future preparedness. RIB LUPP is an important tool for ensuring effective communication and cooperation between different actors in the event of a crisis or accident, and it contributes to increased safety and faster responses. Through integration with SOS Alarm, data such as unit status and notes can be imported automatically.

The system is due for a platform update and its future use is currently being analysed, with a decision expected around the turn of the year 2024/2025. A possible connection to WIS will be included in the evaluation.

[93] MSB, About WIS, https://www.msb.se/sv/verktyg--tjanster/wis/om-wis/
[94] MSB, MSB RIB Lupp – for management and follow-up, https://www.msb.se/sv/verktyg--tjanster/lupp/

SGSI – a national communications network

SGSI (Swedish Government Secure Intranet) is a national communications network that is separate from the internet.[95] The network has been developed for secure, encrypted communication between public authorities, public organisations and certain private actors both within Sweden and in Europe. SGSI has been developed to support effective coordination, particularly in the event of serious incidents, disruptions and crisis situations.

SGSI provides a secure platform for information transfer, enabling sensitive and confidential information to be shared without risk of unauthorised access. The network enables secure access to government databases, email and video conferencing, and ensures that these functions are protected against external threats and disruptions.

To connect to SGSI, users must meet high security requirements, which means that they must apply information security standards equivalent to ISO 27001, an international standard for information security. The Swedish Civil Contingencies Agency (MSB) has overarching responsibility for SGSI, while the Swedish Armed Forces is responsible for supervising SGSI.

SGSI is mainly used by public authorities, but it is also available to certain other actors who have a particular need for secure communication. Municipalities, regions and private actors with security-classified operations can connect to SGSI. For example, SOS Alarm uses it to ensure effective and secure communication in emergency situations.

Situational assessments

There are many different situational assessments with different content based on different purposes and needs. Each actor may need different information in their situational assessments, and different functions within a single actor may also have differing needs. Overall situational assessments provide a description of a selection of information from several actors' situational assessments, and provide an overview of the participating actors' views on the incident that has occurred. Overall situational assessments complement rather than replace the actor-specific situational assessments.[96]

National Board of Health and Welfare

In its work with mass casualty plans, the National Board of Health and Welfare has developed two forms containing information that is important to collect in order to assess the current situation when a specific incident has

[95] MSB SGSI, see note on page 2
[96] MSB (2015) Common ground for cooperation and management in the event of societal disruptions, p. 207.

occurred. The forms include information about the need for and possibility of providing support with medical transport. The forms are not limited to medical transport, but also describe factors closely linked to medical transport, such as patient care spaces.

One form is for the affected region in need of support. This is when the region recognises that it cannot handle the situation on its own or with the support of regions it cooperates with, and national cooperation becomes necessary. In the form, the region describes the incident that has given rise to the need, its need for support such as patient care spaces and/or medical transport, and further details such as contact information, the damage situation and the need for other cooperation.

The second form is for the regions that are to cooperate and support the affected region. The regions can indicate their ability to provide support in the form of patient care spaces, staff or other resources, and transports. They can also indicate whether there is a need for further cooperation.

Central Crisis Preparedness Department (KBA)

SOS Alarm plays a role in Sweden's strategic crisis preparedness. Its Crisis Preparedness Department (KBA) is responsible for warning or alerting central authorities within the total defence system when something has happened or is likely to happen that causes strain on society.

KBA forwards information to officials on standby (TiBs) and the management functions of the authorities that have special responsibility for crisis preparedness, the Government Offices of Sweden and other public authorities.

specifically designated by the Government. The aim is to be able to quickly activate management functions at authorities to take action against stresses on society.

The so-called Emergency Alert Agreement between the state and SOS Alarm gives SOS Alarm the task of relaying information to:

- Officials on standby (TiBs) and the management functions of the authorities with specific responsibility for civil preparedness pursuant to Ordinance (2022:524) on the preparedness of public authorities (who are required to have such a function pursuant to a government decision),
- County administrative boards responsible for civil areas in accordance with the Ordinance (2022:525),
- The Swedish Armed Forces,
- The Government Offices of Sweden.

Appendix 4. Medical transport in Sweden in times of crisis and war – Prototype and conceptual solution

Prototype and conceptual solution

Home page with overview

The home page consists of an interactive map with various functions and filters from a range of different sources (see Figure 1) that the user can choose to enable or disable. Data is updated and displayed in real time, giving the user an overview of the situation nationally, but can also be zoomed in to the regional level. The various filters contribute to the overall situational assessment and give the user an understanding of the national situation as a whole. The various filters are described below.

Medical transport/Ambulance vehicles

This layer shows medical transport resources at the national level and their availability. The map shows an aggregated view of the number of available or soon-to-be-available resources linked to each region, as well as the districts or bases to which the resources belong. If the user wants a more detailed view of available resources, they can go from the map to the overview page for medical transport. The medical transport layer on the map provides a picture of where in the country resources are available and provides an overview of the current situation. Information about medical transport is primarily obtained from CoordCom[97] and Alitis[98].

Incidents

Incidents that are deemed to require national coordination are displayed on the map interface. When the user clicks on an incident, information is displayed about where the incident occurred, when it occurred and what type of incident it is. The incident also has a status indicator that describes the level of assistance required. Any support operations related to the incident are also shown in the same view. A link in the incident view allows the user to click through to more information about the incident or to go to the

[97] CoordCom, Omda CoordCom, https://omda.com/solutions/emergency/omda-coordcom/
[98] Alitis Alecom, Alecom, https://www.alecom.se/

incident list view. The list view can be accessed via the main menu. Incidents are created directly in the system under the “Incidents” tab.

Figure 1: Image of map view with the “Incidents” filter

Hospitals

The prototype also shows hospitals on the map. Users can see where the hospital is located and what type of emergency care is provided at the selected facility. In a future, further developed version, it may also be relevant to show the availability of patient care spaces in hospitals, as this has been requested by the actors interviewed. The location of hospitals can be a contributing factor to which resources are sent to those affected.

Weather

Weather is also displayed on the map view, as weather data can affect which resources are chosen and where patients are sent. For example, there may be situations where certain types of vehicles, such as helicopters, cannot be used due to prevailing weather conditions. Weather data contributes to the overall situational assessment and helps to make informed decisions. Weather data can be retrieved from the Swedish Meteorological and Hydrological Institute (SMHI).

Power grid disruptions

Like weather, information about power grid disruptions can also be valuable to get a better picture of the situation and be able to deploy the right resources in coordination. Power grid disruptions can affect which roads are used to transport patients and where those affected are sent. The power line layer shows both where power lines are located and where there are disruptions.

Traffic disruptions

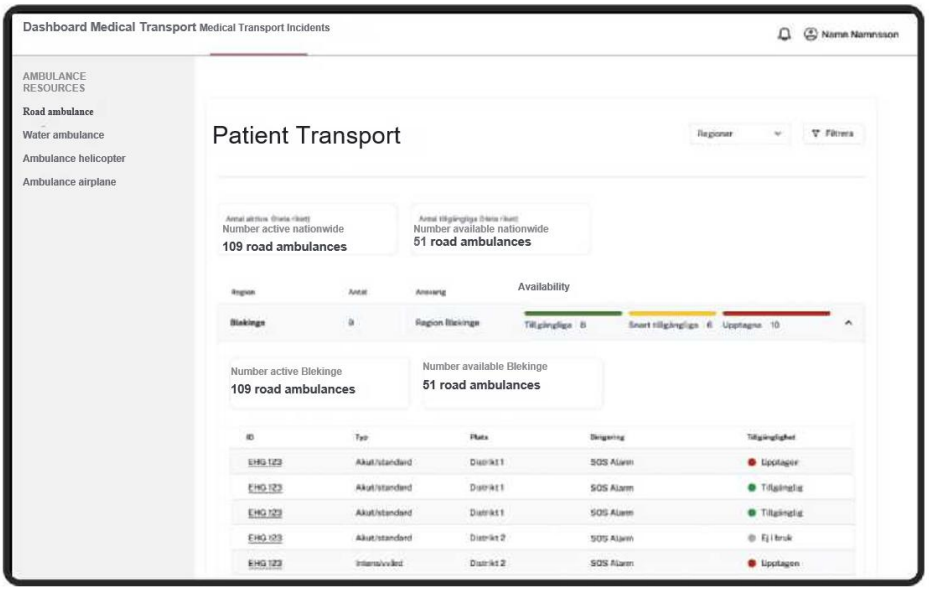
Traffic disruptions can also be displayed in the map view. Like other factors, the traffic situation can affect where resources are borrowed from and the type of vehicle sent to the scene of the incident. The map can display various traffic-related data such as disruptions, road works and road conditions. The information is retrieved from the Swedish Transport Administration.

Figure 2: Image of map view with the "Traffic disruptions" filter

Medical transport

Under the "Medical Transport" tab, the country's medical transport resources are listed on subpages, divided by transport type. The resources in the lists are located under the respective region to which they belong. The views show the availability of resources in the form of real-time data, just like in the map view. The list view shows the number of available and soon-to-be-available transports, as well as information about the district/base. Transport alternatives, such as road ambulance and ambulance helicopter, are listed under the "Medical Transport" tab. Transport data is retrieved from CoordCom and Alitis. The pages under "Medical Transport" are intended to help create an overview of medical transport that is currently lacking at the national level, according to the assignment.

Figure 3: Under the “Medical Transport” tab, a collective view of each region’s medical transport resources



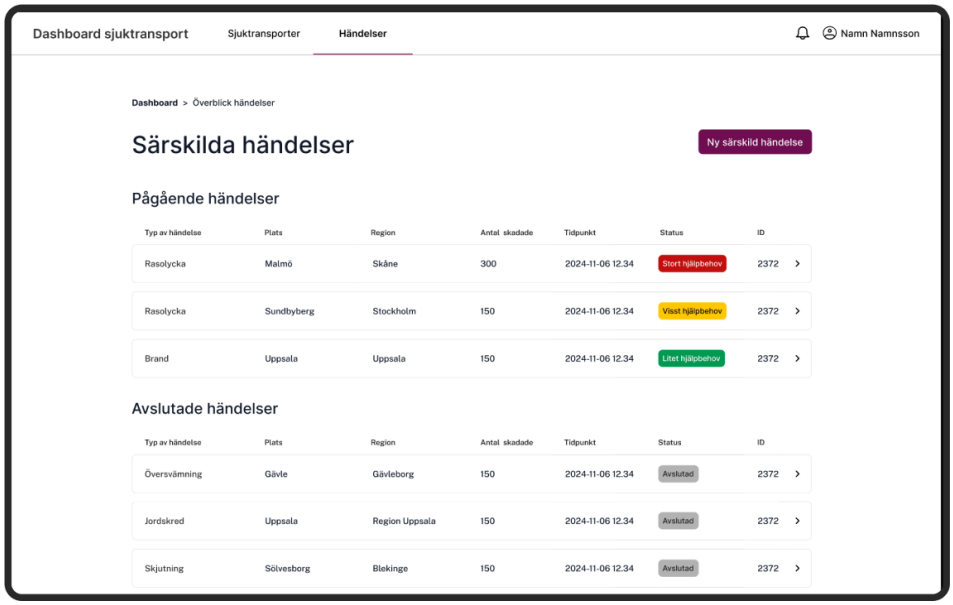
Incidents

Incident summary page

The “Incidents” tab lists ongoing incidents that require national coordination. The list also shows past incidents that are no longer active. As with the map, the list shows the type of incident, when it occurred/was first reported, its status, and the city and region. From the summary page, you can create a new incident via a link to a form. The content of the form is based on the National Board of Health and Welfare’s template for collecting data on resource needs in mass casualty events and consists of both fixed values and free text fields.

You can also click on an individual incident from the incidents list view. Each individual incident contains information as shown in the figure below.

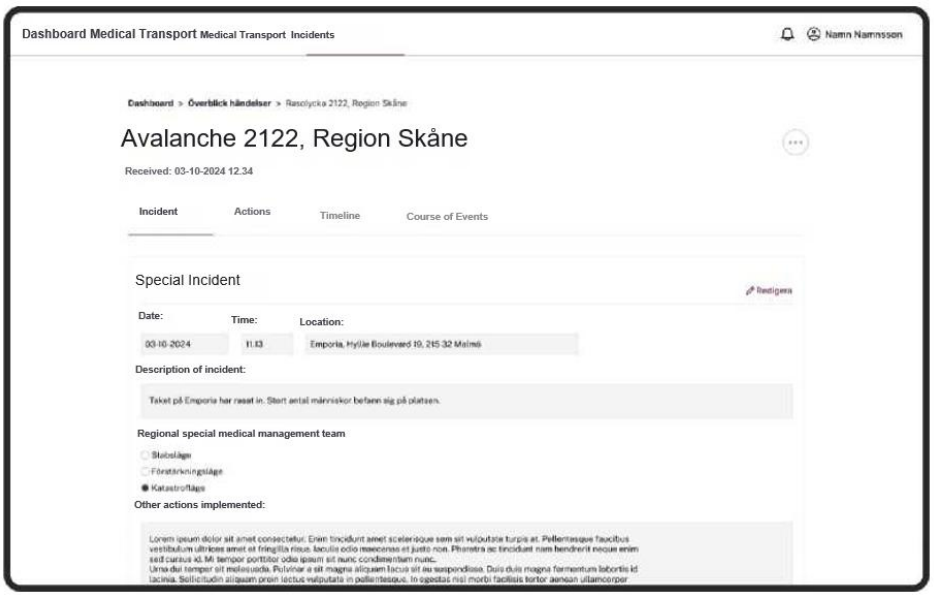
Figure 4: Under the "Incidents" tab. List view of ongoing and past incidents



Incident information

There are four incident information tabs available: Incident, Actions, Timeline and Course of Events. Under "Incidents", in addition to the information presented in the list on the summary page, the user can see additional information about what happened and the estimated number of people injured. The injured are divided into different levels based on how serious the injury is considered to be. Adults and children are also divided into separate columns. Furthermore, the need for medical transport support by respective modes of transport to the affected region is also shown, as well as contact details for the National Board of Health and Welfare's TiB (official on standby). The information under "Incidents" is based on the first of the National Board of Health and Welfare's two forms.

Figure 5: View from within a specific incident and the subcategory "Incident", where information about what happened is presented



Actions

Under "Actions", you can see the regions that have sent or will send reinforcements, the type of resources involved, and the number. It is also possible to see which neighbouring regions can send reinforcements to supporting regions. In addition to ongoing assistance efforts, remaining needs are also displayed. Under "Actions", the user can make updates and add new actions. The information under "Actions" is based on the second of the National Board of Health and Welfare's forms for coordinating mass casualty incidents.

Timeline

Timeline is a kind of log function that documents the coordination work related to the incident and generates a timeline. To create a new entry, the TiB at the National Board of Health and Welfare or another person responsible for coordination fills in the type of activities performed, when they took place, who participated, and the results.

Course of events

The last tab under "Incidents" shows information about the progress of the evacuation hour by hour. Here you can see the number of people who need medical transport, how many have already been transported, what resources are on site, and what resources are on the way. At present, it is unclear whether this information can be retrieved automatically from other systems or whether it is data that must be entered manually.

Conceptual solution

The Swedish eHealth Agency proposes a data-driven solution for building the national situational assessment. A data-driven solution involves collecting information from various sources, organising and storing data systematically, and then analysing it. The solution is largely based on components from the national digital infrastructure for health, medical care and welfare.[99] The Swedish eHealth Agency proposes that the solution be developed iteratively.

The proposed solution is based on collecting information from, inter alia, the respective emergency response centres and regions. The information is aggregated into an overall situational assessment in order to supply information to the national coordination plan in real time. The solution provides the conditions for reusing data and creating simulations and planning documentation.

In order to obtain the information flow, integration will take place with the various actors to create a cohesive dataset that can be analysed. It is proposed that the data-driven information supply take place via APIs (Application Programming Interfaces).

National situational assessment

Figure 6: Conceptual solution for national situational assessment

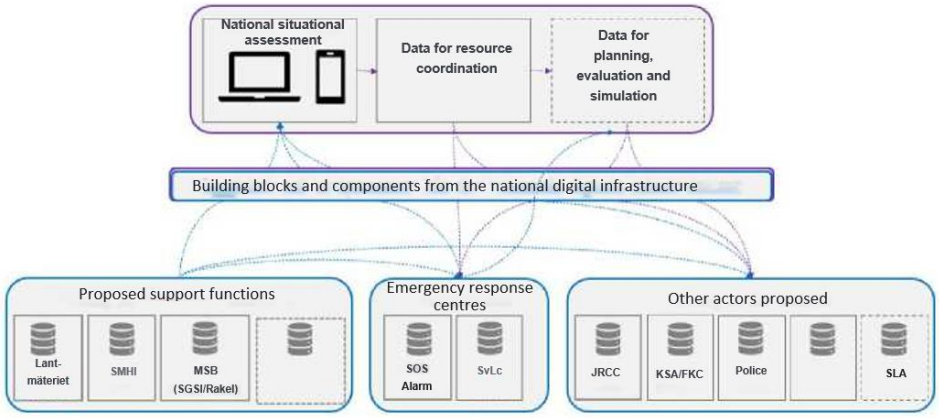


Figure 6 visualises the conceptual solution, where national situational assessments are created from a data-driven information flow.

The information consists of aggregated data from existing digital sources, primarily SOS Alarm[100] and Sjukvårdens larmcentral (SvLc)[101]. Other

[99] Swedish eHealth Agency (2024), Proposed roadmap for the implementation of a national digital infrastructure for health and medical services. Final report S2023/02108. Reg. No 2023/02689.
[100] SOS Alarm, Home page – SOS Alarm, https://www.sosalarm.se/
[101] Region Uppland, Sjukvårdens larmcentral | Uppsala University Hospital, https://www.akademiska.se/for-vardgivare/verksamhetsomraden/ambulanssjukvard/larmcentral/

sources of information include the Swedish Maritime Administration's Joint Rescue Coordination Centre (JRCC)[102], Kommunalförbundet Svenskt Ambulansflyg (KSA)[103] and Flygkoordineringscentralen (FKC), Svensk Luftambulans (SLA)[104], mountain rescue services, and more.

The situational assessments can be supplemented with supporting data in the form of map data from Lantmäteriet, weather data from SMHI and radio and text data from MSB.

An important aspect when data is shared by multiple parties is that information security is taken into account and maintained. Security and robustness are key for the entire solution, and all information handled in the proposed conceptual solution must be classified. All information is handled and presented in the situational assessment with regard to the information security classification of the content. Information classification means that information is evaluated based on what consequences insufficient protection could have on the confidentiality, accuracy and availability of the information. Appropriate protection mechanisms shall be applied in the solution based on the results of the information classification.

In an initial iteration, it is proposed that authorisation be resolved by whitelisting all regions' TiBs and the TiBs of the relevant authorities. All activities are logged as logins, data access or changes, for traceability of user behaviour and identification of any problems or security risks.

An in-depth analysis is required to identify which actors and IT systems have a certain type of information that can be reused to develop the solution in the future.

[102] JRCC, Joint Rescue Coordination Centre (JRCC), https://www.sjofartsverket.se/sv/sjo--och-flygraddning/sjo--och-flygraddningscentralen-jrcc/
[103] Svenskt Ambulansflyg, Home page – Svenskt Ambulansflyg, https://www.svenskt-ambulansflyg.se/
[104] Svensk Luftambulans, Home page – Svensk Luftambulans, https://svenskluftambulans.se/

Socialstyrelsen

Medical transport in Sweden in times of crisis and war (article number 2025-10-9485)
can be downloaded from socialstyrelsen.se/publikationer.