

The county governor of Troms
Report from inspection of sepsis treatment
in the emergency department at
University Hospital of Northern Norway, Tromsø
UNOFFICIAL TRANSLATION¹

Address of the enterprise: 9030 Tromsø

Time span for the inspection: 6. September 2016 – 9. March 2017

Summary

Norwegian Board of Health Supervision (NBHS) has decided that in the period 2016-2017, there will be performed nationwide inspections of the hospitals' emergency departments and their work with recognition and treatment of patients with sepsis.

The county governor of Troms has performed a inspection designed as a system audit at the University Hospital of Northern Norway, Tromsø. This report describes the nonconformities identified within the audited areas. The system audit comprised the following themes:

Identification and initiation of treatment in the emergency department of patients with sepsis or suspected sepsis.

During the inspection we would investigate if the hospital ensures:

- adequate admission, registration and prioritisation (triage) of patients with sepsis or suspected sepsis at the time of admission to the emergency department
- adequate assessment and diagnosis of the patients during their stay in the emergency department
- adequate initiation of treatment of the patients in the emergency department
- adequate observation of the patients in the emergency department
- adequate preparation and discharge of the patients to other departments, supplemented by ordinations/plans for further observation and treatment

The inspection team has 66 health records of patients presenting to the emergency department with sepsis or suspected sepsis.

¹ This report is an unofficial translation of the original report from Norwegian Board of Health Supervision. The original report, along with the reports from the other sepsis inspections, is available on the NBHS website: <https://www.helsetilsynet.no/tilsyn/tilsynsrapporter/?w=2016+Sepsis+i+somatiske+akuttmottak>

At the inspection, three nonconformities were identified:

Nonconformity 1:

The majority of the patients with sepsis did not receive treatment with antibiotics within the time limits prescribed in nationwide guidelines and in the hospital's own goal statements. Patients with severe sepsis who had to wait more than one hour, did not receive adequate treatment.

Nonconformity 2:

The management has not ensured that there is sufficient medical competence available in the emergency department so that assessments and initiation of treatment of patients with sepsis can be performed within the time limits prescribed in nationwide guidelines and in the hospital's own goal statements.

Nonconformity 3:

The hospital management has been aware that patients with sepsis receive delayed treatment with antibiotics in the emergency department but has not implemented sufficient corrective actions.

Date: 9. March 2017

xxxxx
Lead Auditor

yyyyy
Auditor

1. Introduction

This report is written after a system audit at University Hospital of Northern Norway, Tromsø in the period 6. September 2016 – 9. March 2017. It is a part of a nationwide inspection performed in 2016-2017, and one of the planned inspections to be performed by the County governor of Troms this year. The county governors of Finnmark, Troms and Nordland have appointed a joint inspection team to perform the inspections in these counties.

The county governor is through section 2 of the act on governmental supervision of the health and care services given authority to perform inspections with the provision of health and care services.

The aim of a system audit is to evaluate if the enterprise by means of internal control meets the legal requirements. The audit encompassed the following themes:

- which actions were taken by the enterprise to disclose, correct and prevent infringement of the legal requirements relevant for the analysed issues
- if the prescribed actions were performed in practice and, if necessary, corrected
- if the prescribed actions are sufficient to ensure adherence to the legal requirements

A system audit is performed by analysis of documents, through interviews and by other investigations.

This report deals with the nonconformities identified at the system audit, and thus does not present a complete evaluation of the work of the enterprise relevant for the themes covered by the inspection.

- **Nonconformity** is lack of fulfilment of requirements given by or on basis of acts and regulations

The background for the decision to perform inspection of the sepsis treatment, is, i.a. that NBHS has received several reports according to the requirement [on reporting adverse events] in section 3-3 of the act on specialised health care about serious infections and sepsis, where detection of infection has been too late, and where there has been delayed initiation of treatment with antibiotics.

NBHS has established a research project to gain knowledge on how planned inspection can contribute to improving quality on health services. Data collected from patient files in this inspection will be used to evaluate the effect of inspection on the quality of the service. As part of the inspection and this project, we will perform sampling from relevant health records in 8 months and 14 months from now.

2. Description of the enterprise – particular conditions

The University Hospital of Northern Norway (UNN HF) serves a population of about 190.000 inhabitants and consists of three hospitals, respectively in Tromsø, Harstad and Narvik, in addition to Longyearbyen hospital on Svalbard. The main administrative centre of the hospital is located to Tromsø, and is led by the chief executive director.

The health enterprise is divided into nine clinics, among them the *clinic for acute medicine* and the *clinic for medicine*. Each clinic is led by a director who reports to the chief executive director.

The emergency department at UNN HF Tromsø is a department in the clinic for acute medicine. Head of department reports to the director of the clinic. Head of department is at the moment also acting director of clinic for the clinic for acute medicine. Head of the unit for acute somatic admissions is responsible for the nursing services in this unit and reports to the head of the department. There is a medical consultant, 60% of a full position, adhered to the unit for acute somatic admissions as a medical advisor.

The medical on-duty teams consist of an intern, first line and second line registrars, first line registrar for heart and pulmonary diseases and subspecialised consultants in the different parts of internal medicine. The first line registrar is available 24hrs, the second line registrar is available 8hrs-22hrs on week days and 9hrs-15hrs in the weekends. The intern is not available at night time. The intern shall confer with the second line registrar (or first line registrar) related to all investigated patients.

The physicians working in the unit for acute somatic admissions are employed at different parts of the clinic for medicine or the clinic for heart and lung diseases. All physicians in first line or second line duty are undergoing training as a specialist. Head of department/chief consultant of the department of gastrology and nephrology is responsible for planning the on duty scheme and for arranging regular meetings with the physicians on both levels.

RETTTS (Rapid Emergency Triage and Treatment System) is used in the unit for acute somatic admissions. According to activity under algorithm 47 treatment with antibiotics shall be initiated within 1 hour after arrival of the patient.

3. Execution

The system audit consisted of the following activities:

Notice/information regarding the inspection was sent 6. September 2016.

Overview over documents presented by the enterprise is to be found in the chapter on Documents.

Analysis of patient files were performed 7. November 2016 and 5. January 2017.

Opening meeting was arranged 25. January 2017.

Interviews

15 persons were interviewed.

On site visit in the unit for acute somatic admissions was performed 25. January 2017.

Closing meeting was arranged 26. January 2017.

4. What the inspection comprised

In the inspection, we have investigated if the health enterprise governs and controls that patients admitted with sepsis or suspected sepsis are identified and treated according to the requirements laid down in the legislation related to health care.

The inspection was limited to the unit for acute somatic admissions, and activities that are planned and ordered from the unit for acute somatic admissions.

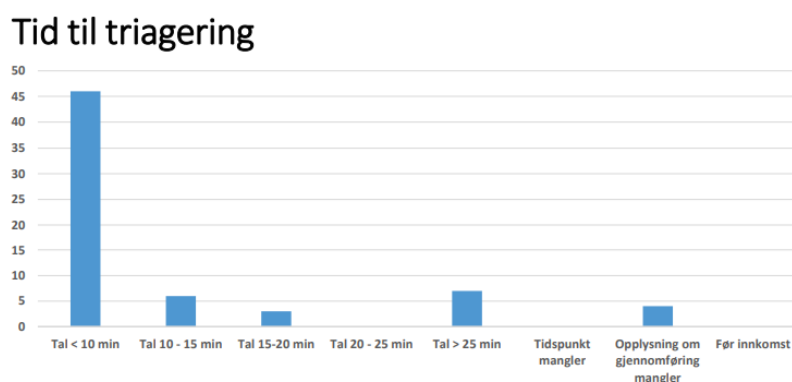
In particular we investigated if the University Hospital of Northern Norway had:

- prudent admission, registration and prioritisation (triage) of patients with sepsis or suspected sepsis at the time of admission to the emergency department
- prudent investigation and diagnosis of the patients during their stay in the emergency department
- prudent initiation of treatment of the patients in the emergency department
- prudent observation of the patients in the emergency department
- prudent preparation and transferral of the patients to other departments, supplemented by ordinations/plans for further observation and treatment

5. Findings

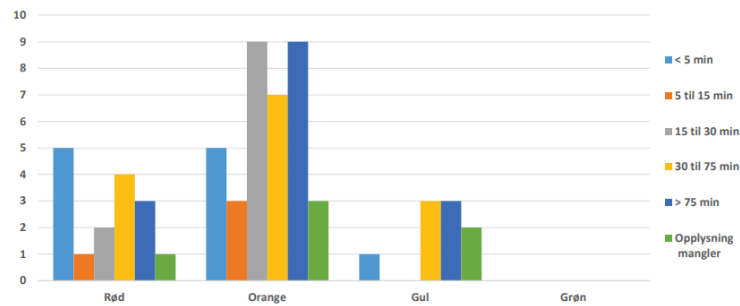
The inspection team has analysed patient files from patients admitted to the unit for acute somatic admissions with sepsis or suspected sepsis. The 66 patients included had an infection and fulfilled at least two of four SIRS-criteria. 33 patient files were from 1. October 2015 and immediately before (called P0), and 33 from 1. December 2016 and immediately before (called P1).

In the graphics below P0 and P1 are combined. The analysis showed:



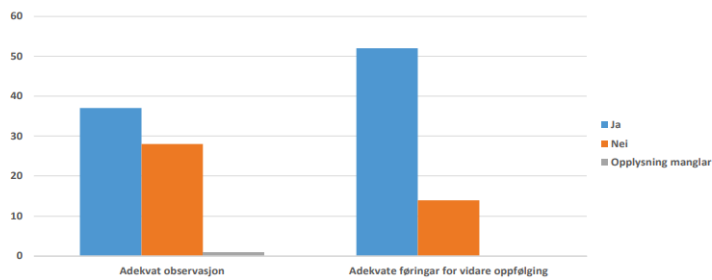
(Time till triage, in minutes)

Tid til legeundersøkelse etter triagefarge



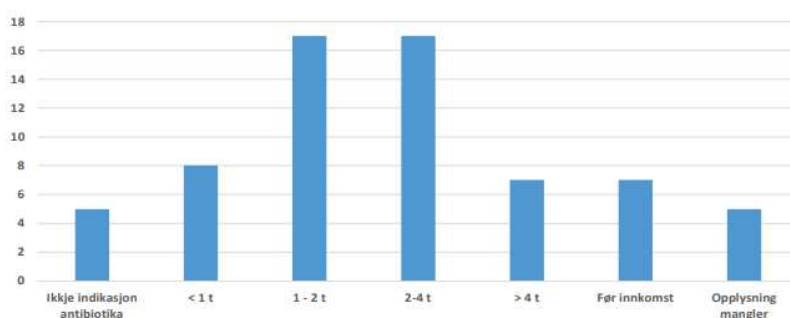
(Time until investigation by physician in minutes, according to triage colour)

Adekvat observasjon og føringer for videre oppfølging



(Adequate observation and instructions for further treatment, Yes (ja), No (nei), Lacking information (grey))

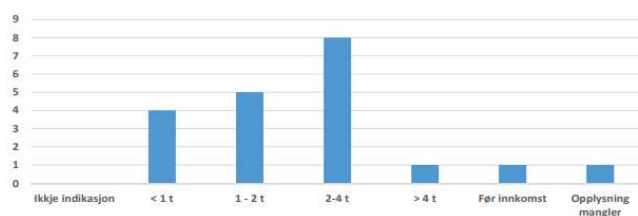
Tid til antibiotika alle pasienter



(Time till treatment with antibiotics in hours, all patients.

No indication, < 1 hr > 4 hrs, Before admission, Lacking information)

Tid til antibiotika for pasienter med alvorlig sepsis



(Time till treatment with antibiotics in hours, patients with severe sepsis.

No indication, < 1 hr > 4 hrs, Before admission, Lacking information)

Three nonconformities were indicated.

Nonconformity 1:

The majority of the patients with sepsis did not receive treatment with antibiotics within the time limits prescribed in nationwide guidelines and in the hospital's own goal statements. Patients with severe sepsis who had to wait more than one hour, did not receive adequate treatment.

This is a deviation from the requirement in section 2-2 of the act on specialised health care and sections 6 to 9 in the regulation on governance and quality improvement in the health and care services.

Justification of this claim:

- The analysis of 66 patient files showed that:
 - 9 of 16 patients with triage colour red were investigated by a physician more than 15 minutes after admission to the hospital
 - 24 of 49 patients with sepsis got their first treatment with antibiotics more than two hours after admission to the hospital
 - 9 of 18 patients with severe sepsis had to wait over two hours before treatment with antibiotics was initiated, 14 of 18 had to wait over one hour. One patient waited more than four hours
- None of the directors of the clinics (clinic for medicine and clinic for acute medicine) have determined specific routines or practice for treatment of sepsis in the unit for acute somatic admissions. Instead, there are several different, older versions of written procedures in Docmap. These are not known for the health personnel, and their status remains unclear. There is also a non-dated flow chart with unclear status. This is presented as wall charts in the unit for acute somatic admissions.
- The health personnel is unsure about which procedures that are currently valid and they have different opinions about if and when treatment with antibiotics shall be initiated.
- Inexperienced physicians use much time for investigating the patients and decide upon treatment with antibiotics. Front line physicians do not always get a go-signal to initiate treatment when searching for support on decisions, even when related to patients with sepsis that according to national guidelines should get treatment.
- The management of the hospital and the directors of the clinics (clinic for medicine and clinic for acute medicine) do not follow up if the hospital achieves the goal specifying that patients with sepsis should get treatment with antibiotics within one hour.
- Conflicts of simultaneity and problems with vacant beds in the unit for acute somatic admissions arise several times every week and this is leading to delayed initiation of treatment with antibiotics.
- Observation of vital parameters of patients with sepsis are not always documented after triage when the patient still is in the unit for acute somatic admissions.
- Physicians and nurses work to a low degree in teams related to the sepsis patients.
- The bed wards often have low capacity and need a long time before being able to accept new patients, and the intensive care unit for internal medicine is often full. This leads to congestion in the unit for acute somatic admissions of patients that are ready for transferral to a bed ward. The capacity of rooms thus is reduced, and leads to new patients with sepsis not always are investigated by a physician when the physician is available. This in turn leads to delayed initiation of treatment with antibiotics.
- The day of the on-site visit we were informed that a patient with severe sepsis had to wait three hours before initiation of treatment with antibiotics, and had to wait more than nine hours before transferral to a bed ward.

Nonconformity 2:

The management has not ensured that there is sufficient medical competence available in the emergency department so that assessments and initiation of treatment of patients with sepsis can be performed within the time limits prescribed in nationwide guidelines and in the hospital's own goal statements.

This is a deviation from sections 6 to 9 in the regulation on governance and quality improvement in the health and care services.

Justification of this claim:

- It is not planned for the physicians in the unit for acute somatic admissions to investigate and treat all patients in accordance with the national guidelines and the hospital's own goals, cfr. nonconformity 1.
- Interns in some occasions are left alone with a higher degree of responsibility than planned due to first line registrars are occupied with telephone calls from physicians outside the hospital and for distributing patients from the unit for acute somatic admissions to the bed wards of the hospital. The second line registrar often is occupied at the observation unit.
- Training of subordinate physicians in treatment of sepsis is failing, and characterised of lacking procedures for this activity.

Nonconformity 3:

The hospital management has been aware that patients with sepsis receive delayed treatment with antibiotics in the emergency department but has not implemented sufficient corrective actions.

This is a deviation from sections 8 and 9 in the regulation on governance and quality improvement in the health and care services.

Justification of this claim:

- Statistics and other instruments are scarcely used to follow up results and objectives.
- The management demands few data on results from the unit of acute somatic admissions, e.g. on waiting time for investigation by a physician and time till initiation of treatment with antibiotics.
- The health personnel has reported nonconformities related to delayed treatment of sepsis in the unit for acute somatic admissions but sufficient actions have not been taken.
- The chief executive officer as well as the directors of the clinics have been aware of the long waiting times for the patients in the unit for acute somatic admissions.
- It remains unclear who is responsible for developing an implementation of joint procedures for nurses and physicians in the unit for acute somatic admissions. The management scarcely has an overview of which procedures that are currently valid.

6. Evaluation of the system of governance of the enterprise

The management scarcely has an overview of which goals that are established for the treatment of sepsis in the unit for acute somatic admissions and if these goals are achieved. It remains unclear who is responsible for ensuring unambiguous procedures for treatment of sepsis unit for acute somatic admissions that is known for everyone. It is known for the management that patients risk to be waiting in the unit for acute somatic admissions to be transferred to a bed ward, but efficient actions have not been taken. The health enterprise thus has not arranged for the health personnel enabling them to take care of their duties in a way that ensures that patients with sepsis at the unit for acute somatic admissions are treated according to national guidelines and the hospital's own goals.

7. Legislation

- Act of 2. July 1999 no. 61 relating to specialised health care.
- Act of 2. July 1999 no. 64 relating to health personnel.
- Regulation of 21. December 2000 no. 1385 relating to patient files.
- Regulation of 28. October 2016 no 1250 relating to on governance and quality improvement in the health and care services.

8. Documentation

Documentation from the enterprise related to management of the services, provided by the enterprise during the preparation of the audit:

- Information in letter from the head of the unit dated 22. September 2016
- Organisational mapping for the health enterprise and the unit for acute somatic admissions
- Overview of physicians taking part in the on-duty scheme in the unit for acute somatic admissions
- Overview of first line and second line registrars, with information on length of service
- Overview of anaesthesiologists
- Overview of nurses in the unit for acute somatic admissions
- Overview of nurses functioning as coordinators in the unit for acute somatic admissions
- Work tasks for coordinator at the unit for acute somatic admissions in Tromsø
- Work tasks for responsible for the waiting room in Tromsø
- Work tasks for the triaging nurse at the unit for acute somatic admissions in Tromsø
- On-duty-order intern (FB1485)
- On-duty-order first line registrar (FB1484)
- On-duty-order second line registrar (FB1483)
- Admission of patients from the ambulance service.
- Algorithm 47 from the RETTS-manual
- Blood sampling routine sepsis

- Joint patient file for acute admissions UNN HF
- Flow chart treatment and monitoring at intermediary and/or intensive care units
- Transferral of patients with internal medical conditions from the unit for acute somatic admissions when lacking places at medical bed wards
- Procedure for handling of deviations UNN
- Copy of reports of deviations
- Minutes of meeting. Sepsis 1 – patient flow 11. April 2013
- Terms of reference, follow up of Sepsis 1 – 29. May 2013
- Minutes of meeting, Quality Commission UNN HF 3. June 2014
- Minutes of meeting, Quality Commission UNN HF 11. May 2016
- Plan for training for newly engaged health personnel in the units for acute somatic admissions and observations
- “Welcome to the physicians department, Clinic of medicine” (Valid from 9. December 2011)
- Check list newly engaged physicians (valid from 21. January 2013)
- Check list – joint plan for training for newly engaged employees in the units for acute somatic admissions and observations
- Agenda internal education internal medicine spring term 2016
- Agenda internal education internal medicine autumn term 2016

Documentation analysed during the inspection:

- Admission of adult patients with infection and suspected sepsis and serious sepsis/septic shock, common part (elaborated 8. February 2010)
- Admission of the patient with serious sepsis and septic shock (elaborated 11. January 2010)
- Admission of the patient with sepsis (SIRS score 2 or above and no symptoms of organic failure) (elaborated 4. March 2010)
- Placing [in bed wards] of patients with sepsis (elaborated 2. February 2010)
- Flow chart admission of adult patients with infection and suspected sepsis (19. February 2010)
- Sepsis-algorithm for physicians in in the unit for acute somatic admissions (valid from 28. October 2011)

Correspondence between the enterprise and the county governor:

- Notification of the inspection in letter dated 6. September 2016
- Documentation from the enterprise dated 22. September 2016
- Additional information/documentation from the enterprise in e-mail 31. October 2016, 4. November 2016 and 13. December 2016
- Agenda sent in letter dated 2. January 2017, revised 10. January 2017

9. Participants at the inspection

[In the original report participants are presented by name and position. Here only position is presented.]

In this table the participants from the enterprise and their type of participation is presented.

<i>Function/position</i>	<i>Opening meeting</i>	<i>Interview</i>	<i>Closing meeting</i>
Nurse, responsible for nursing development, unit for acute somatic admissions	x	x	x
Registrar, internal medicine	x	x	x
Specialist nurse, unit for acute somatic admissions		x	x
Nurse, unit for acute somatic admissions		x	x
Registrar, internal medicine	x	x	
Nurse, unit for acute somatic admissions	x	x	
Registrar, internal medicine		x	
Leading nurse, unit for acute somatic admissions	x	x	x
Consultant, infection medicine	x	x	
Consultant, unit for acute somatic admissions	x	x	x
Head of department, gastrology & nephrology	x	x	x
Director of clinic, medical clinic	x	x	x
Head of department & acting director of clinic (acutemedicine)	x	x	x
Deputy chief executive officer	x	x	x
Chief executive officer	x	x	
Director for quality and development	x		x
Deputy head of department, unit for acute somatic medicine			x

From the inspection authority these took part:

Chief county medical officer, lead auditor

Dep. chief county medical officer, auditor

Senior advisor, auditor

Advisor, auditor

Consultant (anaesthesiologist), medical auditor

Senior advisor, observer