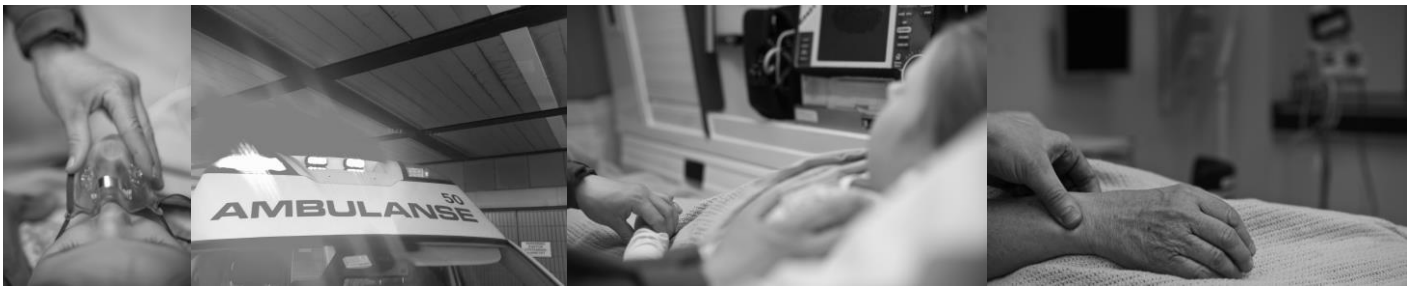
HELSE VEST

SATS-N

Standardised emergency medicine assessment and prioritisation (triage) tool

User manual version 3.02

20/03/2017



Contact persons:

heidi.brevik@helse-bergen.no (SATS-N)

merete.eide@helse-bergen.no (SATS-N for adults and children over 15 years)

mette.engan@helse-bergen.no (SATS-N for children 0-14).

rune.aalvik@helse-bergen.no (SATS-N for ambulance services)

SATS-poster for children and adults: Emergency Medicine Society of South Africa (EMSSA)

Pictures: Kim Søderstrøm

Contents

PREFACE

SATS Norge (SATS Norway, abbreviated SATS-N) is based on the South African triage tool SATS (South African Triage Scale) and was introduced as an assessment and prioritisation tool (triage tool) at Haukeland University Hospital (HUH) Emergency Department (ED) and in the hospitals ambulance service since April 2013. In 2015, Western Norway Regional Health Authority's executive medical directors took the initiative to a project aimed at introducing a common assessment and prioritisation tool in the regional health authority's chain of emergency care. The aim of the project was to implement a new assessment and triage tool as part of the patient safety programme for the Regional Health Authority in Western Norway.

The tool chosen was SATS-N, and during autumn 2015 and winter 2016, it was introduced in all the region's emergency departments and ambulance services. Some of the contents of the early versions of SATS-N were adapted to local conditions which made them less relevant for other ED`s and ambulance services. We have therefore carried out a major revision of SATS-N to ensure a shared understanding of concepts and uniform use of the tool across the Western Norway Regional Health Authority.

We would like to thank everyone who has contributed viewpoints and valuable advice when discussing the best possible solutions for developing this tool (SATS-N version 3.02)

SATS-N aims to improve the quality of the initial assessment and priority of patients treatments based on the severity of their condition (in the chain of emergency care). Our aim is that ambulance staff, RN's and Doctors will appreciate this as a useful tool by helping them assess the patient correct, more effectively and provide the patients right priority and treatment in time.

APPROPRIATE CARE - AT THE RIGHT TIME - IN THE RIGHT PLACE.

By reading this manual and completing the online training course this will help you to utilize this assessment tool in your clinical practice.
It is important for us to improve the quality of this tool to ensure the best treatment for our patients.
We would like to hear from you if you have any questions, comments or suggestions for improving this assessment tool.
We hope you find this tool helpful and would like to wish you good luck with implementing SATS-N.

Western Norway Regional Health Authority, June 2016.

SOUTH AFRICAN TRIAGE SCALE – SATS

The South African Triage Scale is a triage model developed in South Africa by doctors, nurses and paramedics, first through the organisation Cape Triage Group, later by EMSSA (Emergency Medicine Society of South Africa), where a separate group, SATG (The South African Triage Group), has been established. The first version was introduced in 2006, and it has been updated several times since. SATS is structured as a stepped triage model with five priority levels, and includes a *discriminator list* and *TEWS (Triage Early Warning Score)* – a systematic assessment and scoring of vital signs, injuries and mobility. In addition, the patient's priority level can be upgraded based on clinical judgment; *Senior Healthcare professional's discretion.* The priority level indicates how soon the patient should be seen by a doctor. Patients are either assigned to the RED priority level and seen immediately, ORANGE or seen within ten minutes, YELLOW and seen within 60 minutes, or GREEN and seen within 240 minutes. The BLUE priority level is for deceased patients.

Two versions of SATS have been developed in South Africa: one for adults and children over 13 years of age (or taller than 150 cm), shown in Figure 1, and one for children, shown in Figure 2. The paediatric version has a common discriminator list, but different TEWS tables depending on the age of the child. There is one for children aged 3–12 years (or between 96 and 150 cm tall) and one for children under 3 years of age (or shorter than 96 cm).

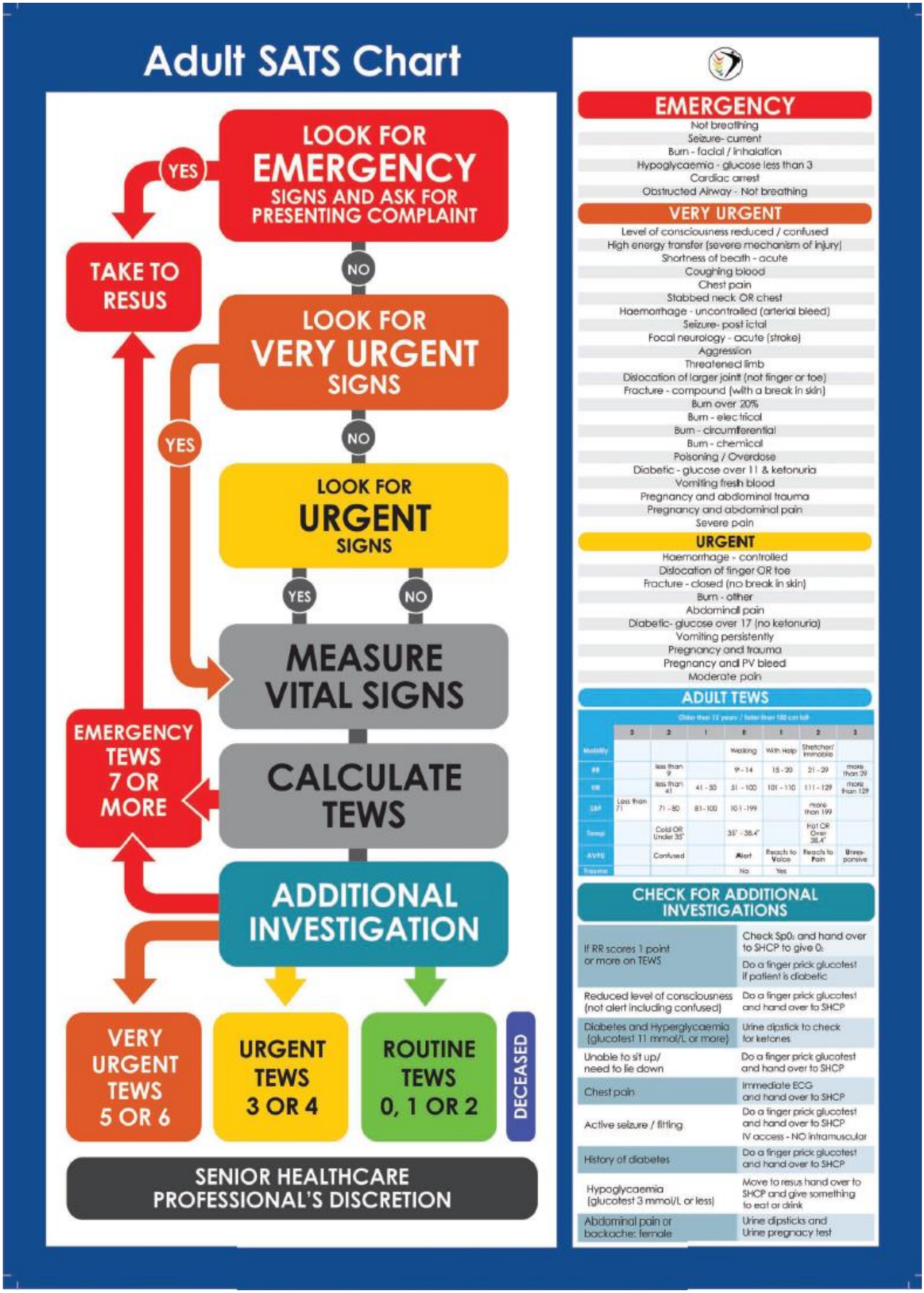


Figure 1 (emssa.org.za)

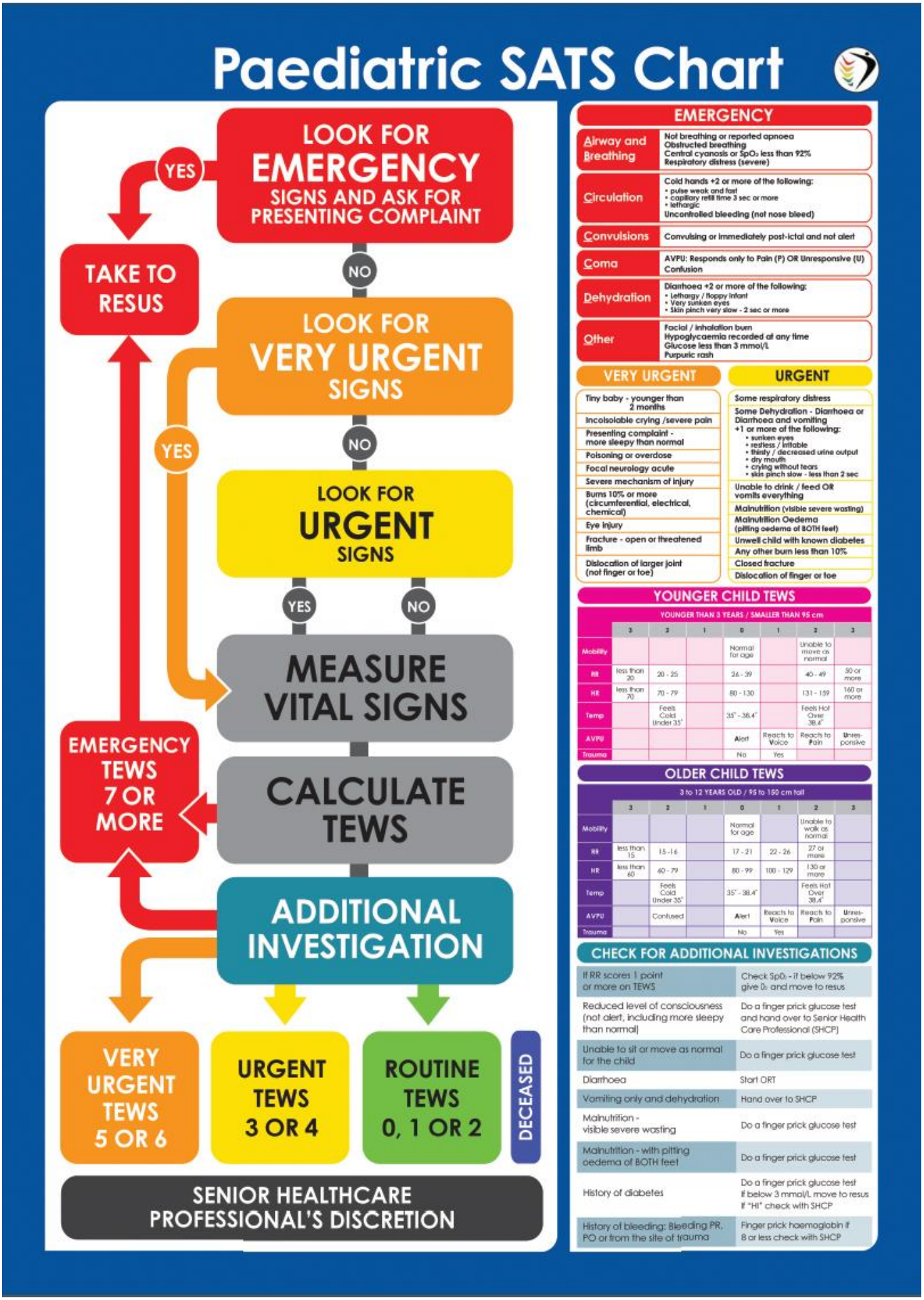


Figure 2 (emssa.org.za)

SATS-N

SATS-N is a standardised assessment and prioritisation (triage) tool based on the South African triage tool SATS. SATS-N consists of a discriminator list of symptoms and conditions that can result in a patient being assigned to the red, orange or yellow priority level. There are footnotes to some of the symptoms/conditions in this discriminator list. The footnotes are intended to specify the terms used, and sometimes provide guidelines on when to upgrade a patient to the next priority level. SATS-N also includes vital signs scores – TEWS, and provides a possibility to upgrade the priority level based on healthcare professionals' discretion.

Background

The Emergency Departments and the ambulance service

The Emergency Department at Haukeland University Hospital (HUH) was allocated local quality development funds from Western Norway Regional Health Authority in 2011 for the project **Verktøy for vurdering og prioritering av pasienter i den akuttmedisinske behandlingskjeden** ('Tools for assessment and prioritisation (triage) of patients in the chain of emergency care'). The project was a collaboration between the Emergency Department, the Department of Emergency Medicine and the clinical departments at HUH that treat patients as part of the chain of emergency care.

The objective of the project was to improve the quality of the initial assessment and prioritisation of patients with acute illness or injuries by introducing one common set of criteria for patient assessment and prioritisation. The tool must be known and suitable for use by all parties in the chain of emergency medicine.

The project group focused on finding a tool that:

- is simple to use both in the ambulance service and in hospital settings
- contains an assessment of vital signs
- is symptom-based
- can be adapted to local conditions so that its medical content has support in the clinical departments that are medically responsible for the patients.

After doing research and considering several international triage models, we chose SATS (South African Triage Scale). EMSSA (Emergency Medicine Society of South Africa) granted the project permission to adapt SATS to Norwegian conditions. Local adaptations were made in cooperation with doctors from the clinical departments at HUH.

EMSSA has done a great job developing SATS into a simple and good triage tool. They have obligingly allowed us to make changes and adaptations to the model to suit our local conditions and standardised care pathways.

We are deeply grateful to them!

The project group, SATS-N

Emergency Department:
Merete Eide Hernes, project manager
Anita Hestad, nurse

Department of Emergency Medicine:
Rune Aalvik, senior consultant, anaesthesiology
Bård Heradstveit, senior consultant, anaesthesiology
Sveinung Rotnes, nurse, ambulance/Emergency Medical Communication Centre (AMK)
Olav Røssland, paramedic instructor

Department of Internal Medicine:
Ole Frithjof Norheim / Rolf Christiansen

Surgical Clinic:
Sturla Pilskog

Reference group:
Physicians from:
Department of Heart Disease
Department of Thoracic Medicine
Department of Neurology
Department of Neurosurgery
Orthopedic dept.
Department of Ophthalmology
Representatives of:
Regional Trauma Care Centre, Western Norway Regional Health Authority
Emergency department, Voss Hospital
Emergency department, Haraldsplass Diaconal Hospital

Project owner
Heidi S Brevik, head of the Emergency Department

SATS-N for children

In spring 2014, the Children's Clinic (BKB) at Haukeland University Hospital (HUH) was allocated local quality development funds from Western Norway Regional Health Authority for the project *Vurderings- og prioriteringsverktøy for den akuttmedisinske håndteringen ved Barneklinikken* ('Assessment and prioritisation (triage) tool for emergency medical care management at the Children's Clinic').

Since a modified version of the South African Triage Scale had already been introduced for adults and children over 13 years of age in the ambulance service and Emergency Department in Helse Bergen health trust, it was a natural decision to continue to use this system for children too. The Children's Hospital has therefore made a special Norwegian version for children in collaboration with the Emergency Care Clinic, the Department of Emergency Medicine and the relevant clinical departments at HUH. Following the introduction of SATS-N for children, the age categories will be as follows:

- Children aged 0–14 years
- Adults, children aged 15 years and older, and all pregnant women regardless of age

The project group, SATS-N for children

Internal project group, BKB:
Mette Engan, specialist registrar, project manager
Asle Hirth, senior consultant, head of section
Ingrid Torsvik, senior consultant
Hans Jørgen Guthe, research fellow
Jan Magnus Aase, specialist registrar
Charlotte Nordvik, nurse
Hege Fagerholt, nurse
Aslaug Miljeteig, nurse

Extended project group:
Mette Engan, specialist registrar, BKB
Charlotte Nordvik, nurse, BKB
Merete Eide Hernes, adviser, Emergency Care Clinic
Rune Aalvik, anaesthesiologist, senior consultant, the ambulance service, Department of Emergency Medicine
Olav Røssland, Paramedic instructor, Department of Emergency Medicine
Øystein Tveiten, specialist registrar, Department of Neurosurgery
Dejan Varinac, senior consultant, Surgical Clinic
Bjørn Christensen, senior consultant, Surgical Clinic
Jeanett Hess-Erga, senior consultant, ENT dept.
Torbjørn Kristensen, specialist registrar, Orthopedic dept.
Lene Frøyen Sandvik, senior consultant, Department of Dermatology
Henning Sandsmark, acting senior consultant, Department of Ophthalmology

Local adaptations

Many changes have been made in the discriminator list and TEWS in the Norwegian version of SATS, and it would therefore be unnatural to call our product SATS. EMSSA has given us permission to call our version SATS-N. The principles for how the tool is to be used remain the same, however.

We chose not to include priority level BLUE in the first version of SATS-N. In South Africa, this means that the patient is deceased. From version 2.01 we introduced the BLUE priority level for patients for whom it is not necessary to calculate TEWS. Local guidelines prepared at the local user locations describe in more detail which patients this applies to. Local guidelines should not overrule SATS-N.

The priority level indicates how soon the patient should be seen by a doctor. For practical reasons, it is more difficult to implement this in the ambulance service, where a doctor is not immediately available. The target times given therefore state when the patient should be seen by a doctor in emergency primary care centre/accident and emergency departments, but also serve as recommendations for the ambulance service. SATS-N complies with the recommendations from the South African version for the priority levels RED, ORANGE and YELLOW. For priority levels GREEN and BLUE, the target time is 120 minutes.

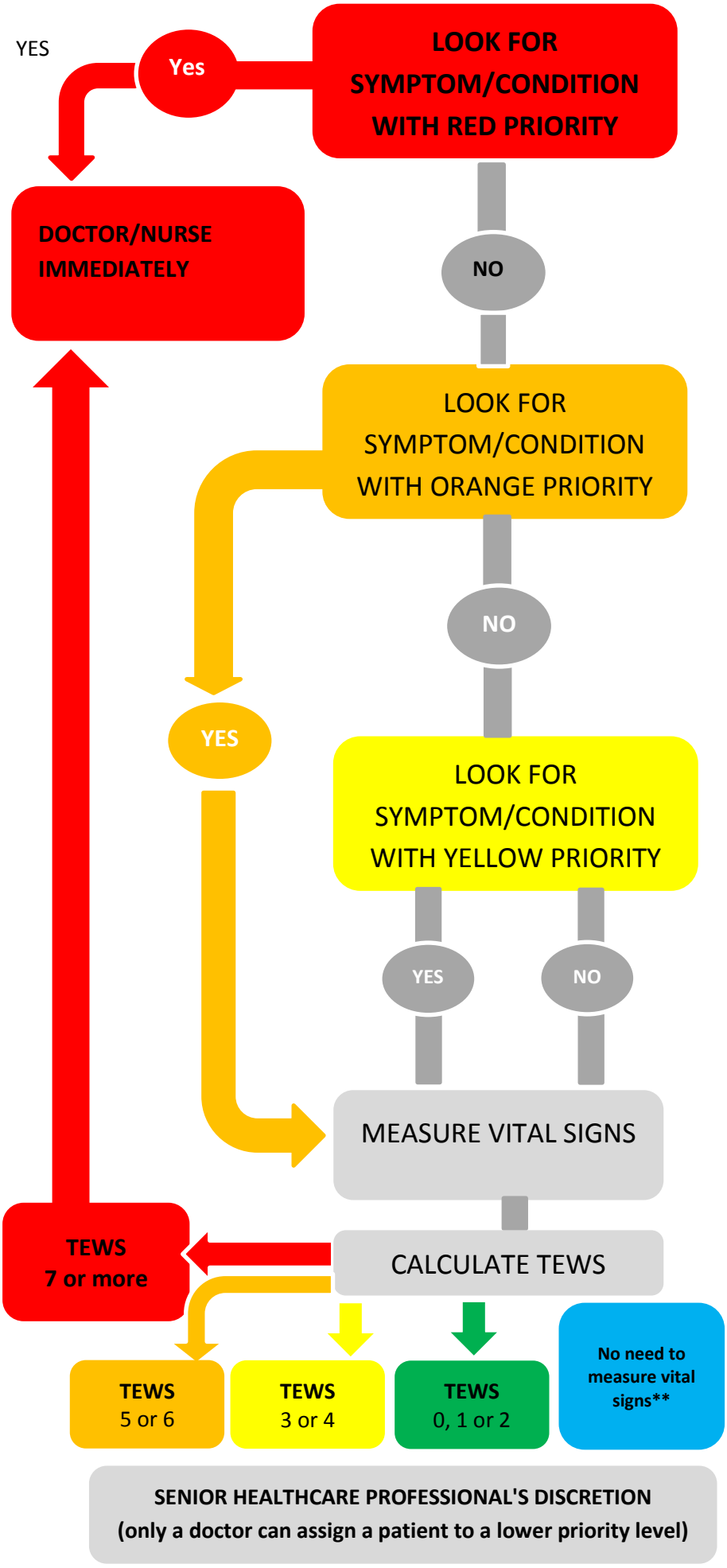
In the first version of SATS-N, we defined children as adults when they had reached the age of 13 and/or a height of 150 cm. Since the introduction of SATS-N for children, the definition has been changed so that the line between child and adult is drawn when children reach the age of 15 years. Pregnant patients are considered adults regardless of their age.

The original paediatric SATS form has two different TEWS tables, one for children up to 3 years of age and one for children aged 3–12 years. The Children's Clinic has chosen to further develop the TEWS tables for children into six different age categories:

- Newborn < 1 month
- 1–12 months
- 1–3 years
- 4–6 years
- 7–12 years
- 13–14 years

The reason for this is that the normal values for vital signs differ greatly between a baby and a two-year-old, and also between a three-year-old and a twelve-year-old. The new TEWS tables are based on PedSAFE's reference table for normal values for children. The background to PedSAFE's reference table is the article *Normal range of heart rate and respiratory rate in children from birth to 18 years of age: a systematic review of observational studies*, Fleming S, Thomson M, Stevens R, et al. M, Lancet 2011. A flowchart has been drawn up to describe the assessment process in SATS, see Figures 1 and 2. See also http://emssa.org.za/ and http://www.pedsafe.no/

SATS-N flowchart



** see local guidelines for information about which patients this applies to

DEFINITIONS

Acute – synonyms include such words as *sudden, unexpected.* The term acute is used to refer to a condition with sudden, often unexpected, onset, but it says nothing about how serious the condition is. Chronic illnesses can be far more serious than acute ones.

Emergency medicine – qualified medical diagnosis, advice, treatment and/or monitoring of acute onset/deterioration of a disease or injury, including acute psychiatric conditions, where urgent medical care can be vital to life and health.[1]

Chain of emergency care – includes the measures and services established *outside and in hospitals* to provide necessary medical care for patients with acute illness that requires treatment: local emergency medical communication centres/emergency medical communication centres (EMCC), out-of-hours emergency primary care services, the ambulance service, emergency departments and clinical hospital departments. [2]

Priority level – category showing the urgency of responding to an incident.[3] Priority level expresses an overall assessment of severity, development over time and the surrounding circumstances.[4]

When the Emergency Medical Communication Centre (EMCC) receives a phone call about an ill patient, the EMCC carries out an assessment by phone and assigns the case to one of three priority levels on the basis of the Norwegian Index for Medical Emergency Assistance.

SATS-N assigns the patient to a priority level on the basis of an *assessment of symptoms/condition, vital sign measurements and clinical judgement*. The priority level is indicated using the colour codes red, orange, yellow, green or blue, with red denoting a serious medical condition and green a less serious medical condition. The priority colour blue is for patients with simple problems for whom it is not necessary to measure and score vital signs (see local guidelines). The priority level shows the priority for medical treatment/care. If more than one patient is waiting, a red patient, for example, will take priority over a green one. The priority level describes the situation at a certain moment and can change, and it is therefore important to assess the patient's priority level continuously and systematically until the patient receives qualified medical diagnosis and treatment.

Triage – from the French word *trier*, meaning to sort. In this context, the term is used to denote a systematic way of assessing a patient's priority level.

Emergency care – referring to or receiving in a healthcare institution patients in need of immediate or urgent examination, treatment or care. Applies to patients assumed to need help within 24 hours of their initial contact with the health service.[5]

[1] The Lovdata legal information website, Regulations on requirements for emergency medical services outside of hospitals, Section 3
[2] Official Norwegian Report NOU 1998:9 *Hvis det haster… Faglige krav til akuttmedisinsk beredskap* ('If urgent...' – in Norwegian only), Chapter 3 The chain of emergency care
[3] KITH – Norwegian Centre for Informatics in Health and Social Care's website Kith.no: Catalogue of definitions for the chain of emergency care, second edition, 31 July 2012
[4] Official Norwegian Report NOU 1998:9 *Hvis det haster… Faglige krav til akuttmedisinsk beredskap* ('If urgent...' – in Norwegian only), Chapter 3 The chain of emergency care
[5] KITH – Norwegian Centre for Informatics in Health and Social Care's website Kith.no: Catalogue of definitions for the chain of emergency care, second edition, 31 July 2012

Symbols

You will find the following symbols in the text and in the discriminator list:

	**A red triangle in the prioritisation list means that the footnote text could entail a higher priority level. It is therefore very important that you take the footnote into account before assigning a priority level.**
	A red exclamation mark means that a task has to be done/action is required.
	A warning triangle with an exclamation mark means that you must pay particular attention to the text.
	The pages that concern SATS-N for children are marked with this figure.

GUIDELINES FOR USE

These guidelines are intended to describe the equipment and physical conditions required, when and how the tool is to be used with a step-by-step explanation of its implementation, and what happens after a patient has been assigned to a SATS-N priority level.

Medical priority level

Patients who are assessed using SATS-N are assigned to a priority level on the basis of their clinical condition. The patient is assigned to one of five priority levels; red, orange, yellow, green or blue, and when a priority colour is communicated, the next link in the chain will know what resources the patient requires. The priority level is a way of communicating how soon a patient needs to be seen by a doctor, and is not a diagnosis or a conclusion about how the patient is doing.

Ambulance response code

It is important to distinguish between the patient's *medical* priority level and the ambulance response code, if any. RED priority in SATS-N often coincides with rapid response, **BUT;** the ambulance response (rapid response or a lower priority) must be determined on a case-to-case basis based on the assessment of the patient's medical condition and the traffic situation.

Destination

Patients with red priority or a TEWS of 7 or more often require hospital admission, but in some cases, it may be expedient to start treatment at an emergency primary care centre first. Each patient must therefore be individually assessed to determine whether they are to be brought to hospital or to an emergency primary care centre. If the destination for certain groups of patients is to be specified, this must be defined in the local guidelines.

Equipment

The following equipment must be present in order to perform good assessment and prioritisation:

- Monitoring equipment with the possibility of measuring blood pressure, heart rate and saturation, and ECG
- Paediatric pulse oximeters in different sizes
- Watch with a second hand for heart rate and respiratory rate counting
- Blood glucose meter
- Thermometer, temporal or ear (rectal for hypothermic patients or patients who are to be put in therapeutic hypothermia following cardiac arrest)
- *Ambulance patient record* with integrated vital sign scoring tool and clinical prioritisation list and footnotes overleaf / *Emergency care patient records* with integrated clinical prioritisation list and scoring table for vital signs (TEWS), and *foot notes*
- User manual
- Emergency departments must have a dedicated space for assessment and prioritisation of patients with a workstation for nurses, an undisturbed area/room for ECGs and a computer to register patient arrival and priority level

SATS-N FOR ADULTS AND CHILDREN FROM THE AGE OF 15 YEARS

Step by step

IF THE PATIENT NEEDS IMMEDIATE TREATMENT, SUCH TREATMENT SHALL BE INITIATED BEFORE THE SATS ASSESSMENT (hypoglycaemia, current convulsions, opioid overdose etc.)

- Take a **brief medical history** from the patient / next of kin / health personnel or others
- Check the **discriminator list** to determine whether the patient has a symptom/condition that denotes the priority level red, orange or yellow. **Remember to check footnotes for details/definitions of terms!** Be particularly aware of red warning triangles in the discriminator list. The priority level arrived at on the basis of the discriminator list is the lowest priority level the patient can be assigned to. If the patient's symptom/condition is not found in the discriminator list, TEWS determines the priority level.

If the patient has a symptom listed under priority level RED in the discriminator list, there is no need to calculate TEWS to determine the priority level. The measurement of vital signs must not delay the patient receiving correct treatment as soon as possible. Vital signs are measured in the ambulance during transport or in the emergency department's treatment room as soon as possible.

- **Measure vital signs** and **document the findings** in the relevant patient record. **Remember to note the time** when the measurement was taken!
- The respiratory rate is counted for 30 seconds and multiplied by 2.
- The heart rate is measured for 15 seconds and multiplied by 4, and if it is irregular, it is measured for 30 seconds and multiplied by 2.
- **Assess the patient's level of consciousness** in relation to **AVPU** or whether the patient has recently become confused.

A – (alert) – is the patient alert?
V – (voice) – does the patient respond when spoken to?
P – (pain) – does the patient respond to pain?
U – (unresponsive) – patients who do not respond to voice or pain are unconscious.

! Everyone whose score fall outside the normal area ALERT; unconscious and intoxicated patients and all patients with head injuries shall be assessed using the Glasgow Coma Scale (GCS).

Glasgow Coma Scale		
Eye opening	**Best verbal response**	**Best motor response**
4 Spontaneous	5 Orientated	6 Obeys commands
3 To verbal command	4 Confused	5 Localising
2 To pain	3 Words	4 Withdraws to pain
1 No response	2 Sounds	3 Weak flexion to pain
	1 No response	2 Extension
		1 No response

- **Temperature** is measured in accordance with the applicable guidelines at all times and using the temperature measurements adopted by the section/department/health trust.
- **Injury** – points shall be awarded for injuries sustained by the patient during **the past 48 hours**.
- Assess the patient's **mobility:**

Patient walking unaided, with support, crutches or a walking frame	**0 points**
Patient in wheelchair, on stretcher or bedridden (acute or chronic)	**1 point**

Blood glucose shall be measured in all patients who

- have a reduced level of consciousness / are unconscious
- have known diabetes
- are confused/acting out/aggressive
- have other indications

- **Calculate the total TEWS** (scoring of vital signs) and document it in the patient record.
- **Clinical discretion** – the discriminator list in SATS-N together with the vital signs score (TEWS) will identify many of the most common presenting symptoms/conditions. Nevertheless, situations may arise where health personnel have to use their clinical discretion as a supplement to the tool. For example, health personnel may wish to upgrade patients with congenital or chronic conditions, or other circumstances to another priority level based on an overall assessment.

  When in doubt – UPGRADE! It is important to document *when* and *why* a patient is assigned to a higher priority level on the basis of health personnel's clinical discretion.
- **Set the priority level** to the higher of the discriminator list, TEWS or clinical discretion. **Only a doctor can downgrade a patient to a lower priority level than the one arrived at using SATS-N.**

Discriminator list, adults and children from the age of 15 years

RED PRIORITY LEVEL	ORANGE PRIORITY LEVEL	YELLOW PRIORITY LEVEL
Unconscious patient ①	**Level of consciousness,** *reduced* ① Δ	
Haemorrhage, *heavy and* ***uncontrolled***	**Allergic reaction,** ***acute*** ⑩ Δ	**Haemorrhage,** *heavy, but* ***controlled***
Burn, > 15% or **face / neck / inhalation, circumferential** or **high-voltage injuries**		**Burn,** *minor*
Fracture with **suspected vascular injury** ②	**Fracture,** ***compound*** or ***displaced,*** or **luxated joint** ②	**Fracture, ankle < 8 hours** or **femoral fracture close to the hip** *diagnosed/suspected* ②
Chest pain, ***ST elevation in ECG*** ③	**Chest pain,** ***current*** or ***ECG changes*** or ***suspected acute coronary syndrome*** ③ Δ	**Chest pain in past 24 hours –** *currently pain-free,* *or* **respiratory chest pain** ③
Pregnant patient with: *Vaginal bleeding, heavy > 12 weeks pregnant* *Convulsions (up to 2 weeks after giving birth)* ④ *Acute, intense and constant abdominal pain – pain between contractions*	**Pregnant patient with:** *Vaginal bleeding, moderate ≥ 23 weeks pregnant* *Symptoms of preeclampsia* ④ *Abdominal trauma + abdominal pain ≥ 23 weeks pregnant* *Contractions and known breech presentation / multiple foetuses / high-risk pregnancy*	**Pregnant patient with:** *Vaginal bleeding, moderate < 23 weeks pregnant* *Abdominal trauma, no pain*
Stroke/TIA, *symptoms* ***< 6 hours*** ⑤	**Stroke/TIA,** *symptoms* ***< 6–8 hours*** ⑤	**Stroke/TIA,** *symptoms* ***< 8–24 hours*** ⑤
Cardiac arrest, ***current*** or ***resuscitated***	**Headache,** ***peracute*** *and* ***intense*** ⑪	**Hb < 7**
Head injury with a GCS score reduced by 2 or more or abnormal pupil(s) ⑥	**Head injury:** GCS score of 14–15 and one of the following: epileptic seizure, neurological deficits, signs of skull fracture, shunt treatment or anticoagulation therapy/coagulation disorder ⑥ Δ	**Head injury,** ***GCS score 14–15*** ⑥
Hypoglycaemia, ***blood glucose < 3***	**Hypoglycaemia,** ***blood glucose > 11*** *and* ***respiratory rate > 22*** ⑫	**Hypoglycaemia,** ***blood glucose > 17,*** *no ketones in urine* ⑫
Infection, *suspected serious and at least two of the following:* **SBP ≤ 100, GCS < 15, RR ≥22** ⑦	**Infection,** *suspected serious and* **TEWS ≥ 3** or **puerperal fever** ⑦ Δ	**Infection,** *suspected serious* ⑦ Δ
Serum potassium > 6.5 and **ECG changes** ⑧	**Intoxication** or **poisoning** ⑬ Δ	
Convulsions, *current*	**Neurological deficits:** ***acute*** ⑭	
	Vomiting, ***fresh blood/haematemesis***	**Vomiting,** *persistent*
Trauma, ***seriously injured*** *patient* ⑨	**Pain,** ***acute*** *and* ***severe*** ⑮ Δ	**Pain,** *moderate* ⑮
Airway, ***at risk*** or ***intubated patient***	**Shortness of breath,** ***acute*** ⑯ Δ	**Shortness of breath,** *moderate* ⑯
	Eye injury, ***penetrating*** *or* ***caustic***	NO FINDINGS IN THE DISCRIMINATOR LIST
TEWS NOT REQUIRED – SEE LOCAL GUIDELINES		

Footnotes, adults and children from the age of 15 years

① **Unconscious patient –** patient who is **unresponsive** (U), or who only **responds to pain** (P), unable to perform motor actions on command.

Reduced level of consciousness, but **responds when spoken to** → **ORANGE** PRIORITY LEVEL. If other vital signs are normal → **YELLOW** PRIORITY LEVEL.

Note! Patients who have had **convulsions** are assessed using these same criteria. If new convulsions → **RED** PRIORITY LEVEL.

② **Fractures:**

RED PRIORITY LEVEL:

Fracture with suspected vascular injury - signs of ischaemia distal to the injury site: ***Pain*** – ***pale/poorly perfused skin*** – ***reduced*** *or* ***absent sensation*** – ***no pulse.*** **An unstable pelvic fracture** is by definition a **suspected vascular injury.**

ORANGE PRIORITY LEVEL:

Femoral fracture, symptoms:

Rotational displacement, angulation, shortening or pathological movement. Pain over the fracture, i.e. no pain in the groin areas as with hip fractures. Such fractures can cause significant haemorrhage (1–2 litres), resulting in swelling of the soft tissue.

Major displacements, luxated joints and compound fractures.

YELLOW PRIORITY LEVEL:

Hip fracture: If a patient has fallen and has groin pain and an externally rotated and shortened leg, there is reason to suspect a hip fracture (not to be assigned to orange priority despite displacement).

③ **Chest pain**: (See also footnotes ⑯ Pain and ⑰ Shortness of breath) with ECG changes, pain at the time of triage or if there is reason to suspect acute coronary syndrome → **ORANGE** PRIORITY LEVEL

ST-elevation in ECG → **RED** PRIORITY LEVEL

Chest pain **radiating / shortness of breath / cold sweat / clammy / pale / vomiting** → **RED** PRIORITY LEVEL

Chest pain and **syncope / paralysis / ischaemia of the extremities** (NB! **dissecting aortic aneurysm**) → **RED** PRIORITY LEVEL

④ **Pregnant with**:

- **Convulsions** in women who are **pregnant, in labour or have given birth in the past two weeks** are a symptom of eclampsia, which is a life-threatening condition.
- **Headache, visual disturbances, epigastric discomfort and elevated blood pressure** in women who are more than 20 weeks pregnant are reasons to suspect **preeclampsia**.

⑤ **Stroke/TIA** with one or more of the following symptoms:

- Facial paresis
- Weakness of arm and/or leg
- Loss of ability to speak
- Loss of vision in one eye / visual field deficits

with a **duration of less than 6 hours**, with **symptoms** that are either **persistent** or **transient** (the patient can be asymptomatic on examination) → **RED** PRIORITY LEVEL

with symptoms lasting 6–8 hours → **ORANGE** PRIORITY LEVEL

8–24 hours → **YELLOW** PRIORITY LEVEL

If the patient **woke up in the morning with stroke symptoms** – consult the emergency medical communication centre/neurologist for guidelines on wake-up stroke. To be treated as **RED** PRIORITY LEVEL until a neurologist says otherwise.

⑥ **Head injury:**

- **Head injury** with a **GCS score of ≤ 13 –** see the criteria for trauma team activation
- **Head injury** with a **GCS score of 14–15** and one of the following: **posttraumatic epileptic seizure, focal neurological deficits, clinical signs of skull fracture, shunt treatment for hydrocephalus** or **anticoagulation therapy [6]/ coagulation disorder → ORANGE** PRIORITY LEVEL
- **Head injury** with a **GCS score of 14–15 in a patient > 65 years** who takes **antiplatelet medication[7] → YELLOW** PRIORITY LEVEL
- **Head injury** with a **GCS score of 14** without risk factors **→ YELLOW** PRIORITY LEVEL
- **Head injury** with a **GCS score of 15** and **one of the following:** suspected/confirmed **loss of consciousness** or **repeated vomiting → YELLOW** PRIORITY LEVEL
- **Head injury** with a **GCS score of 15** without risk factors → **GREEN** PRIORITY LEVEL

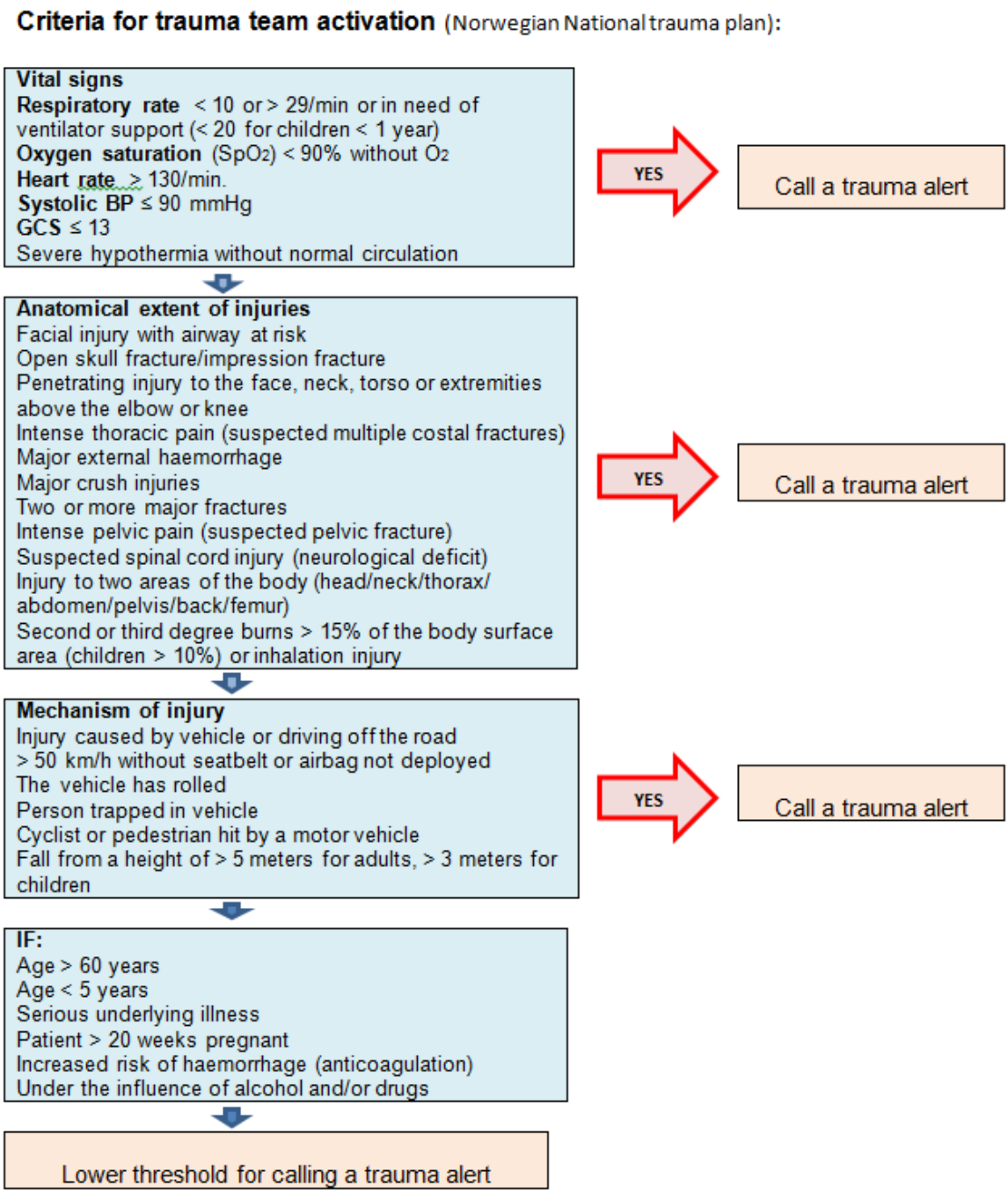
⑦ **Infection:** Serious infection includes infection of the airways, abdomen, urogenital system, soft tissue, CNS and infections with unknown focus.

- **Patients who are undergoing chemotherapy** or are **immunodeficient** can quickly go into a critical or life-threatening condition with septic shock in the event of infection. In the event of fever *or* altered mental status *or* abnormal vital signs → **RED** PRIORITY LEVEL
- **Puerperal fever** – temperature of more than 38°C for at least 2 of the first 14 days after giving birth → **ORANGE** PRIORITY LEVEL

⑧ **Serum potassium** > 6.5 and ECG changes → **RED** PRIORITY LEVEL. With normal ECG → **ORANGE** PRIORITY LEVEL

[6] E.g. warfarin, NOACs (dabigatran, rivaroksaban, apiksiban)
[7] E.g. acetylsalicylic acid, dipyridamole, clopidogrel

⑨ **Trauma** – criteria for trauma team activation (Norwegian National trauma plan):



⑩ **Acute allergic reaction → ORANGE** PRIORITY LEVEL,
BUT if it is affecting the patient's **circulation** (hypotensive/tachycardia)/**respiration** (stridor/dyspnoea**)** or if **the airway is at risk → RED** PRIORITY LEVEL.

Note! If an allergic reaction (skin, airways, eyes, stomach) has lasted for more than 24 hours and the vital signs are normal → **GREEN** PRIORITY LEVEL.

⑪ **Headache, peracute/intense –** out of the blue – reason to suspect **subarachnoid haemorrhage**

⑫ **Hyperglycaemia –** blood glucose > 11 and a respiratory rate of ≥ 22 per minute are reason to suspect **ketoacidosis** (particularly in patients with Type 1 diabetes)

⑬ **Intoxication / poisoning → ORANGE** PRIORITY LEVEL**.**

Note! Tablet intoxication past six hours (with or without symptoms) – seek medical attention or call the Norwegian Poison Information Centre at 22591300 for advice about upgrading to **RED** PRIORITY LEVEL.

RED PRIORITY LEVEL if:

- Unconscious following tablet intoxication
- Unconscious intoxicated patient with **systolic BP < 90 or > 200** or **absent radial pulse** or patient with **O_2 saturation < 90%**
- Carbon monoxide poisoning (CO) – for example in connection with fires, heating or cooking with firewood/gas/propane, generator use in an enclosed space
- Carbon dioxide poisoning (CO_2)
- Hydrogen sulphide poisoning (H_2S) / manure/sewer gas
- Cyanide poisoning – for example in connection with fires

YELLOW PRIORITY LEVEL – alert patient with stable circulatory and respiratory status more than six hours since intake/exposure

⑭ **Neurological deficits,** acute

- Loss of sensation or movement following trauma
- Loss of sensation or movement in cancer patients / suspected spinal cord lesion
- Back pain with paralysis and distal loss of sensation in the legs, urinary retention and/or faecal incontinence, loss of sensation in and around the genitalia, anus and the buttocks and inner thighs (saddle block anaesthesia)

⑮ **Pain**

- **Intense** pain **–** the worst pain the patient has ever experienced (almost unbearable). VAS > 8. Often accompanied by symptoms such as paleness, sweaty skin, distressed patient and altered level of consciousness → **ORANGE** PRIORITY LEVEL

  Exceptions:

  - **Acute, intense and constant abdominal pain** with systolic blood pressure < 90 and/or a heart rate of > 110 → **RED** PRIORITY LEVEL. Note! Patients with known aortic aneurysm
  - **Women of childbearing age** who **are or may be pregnant** with **intense abdominal pain** and symptoms of **circulatory failure** could be reason to suspect ectopic pregnancy → **RED** PRIORITY LEVEL
  - **Acute, intense pain of the scrotum** with onset during the past ten hours is reason to suspect testicular torsion → **RED** PRIORITY LEVEL

- **Moderate** pain – intense pain, but bearable (VAS 5–7) → **YELLOW** PRIORITY LEVEL
- **Mild** pain **–** VAS < 5

  See also footnote ③ Chest pain.

⑯ **Shortness of breath –** acute change (minutes/hours) from normal/chronic condition. Dyspnoea during speech / use of accessory respirator muscles / wheezing → **ORANGE** PRIORITY LEVEL, **but;**

RED PRIORITY LEVEL if:

- Assisted ventilation
- Pronounced dyspnoea at rest/during speech, unable to speak
- Cyanosis
- Reduced level of consciousness
- Gurgling respiration and, if relevant, frothy sputum
- Very tired/exhausted patient
- Little or no effect of treatment

Moderate shortness of breath: Dyspnoea on exertion. Is capable of speaking in complete sentences. No use of accessory respiratory muscles. Subjective feeling of shortness of breath → **YELLOW** PRIORITY LEVEL
See also footnote ③ Chest pain.

TEWS, adults and children from the age of 15 years

TEWS Adults	3	2	1	0	1	2	3
Resp. rate		< 9	9–11	12–21		22–29	≥ 30
SpO_2	< 90% with O_2	≥ 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate		< 41	41–50	51–90	91–110	111–129	≥ 130
Syst. BP	< 71	71–80	81–100	101–199		Above 199	
AVPU		Confusion, new		A: Alert	V: Responds to voice	P: Responds to pain	U: Unresponsive
Temp.		Cold or < 36		36°–38°	38.1°–39°	≥ 39.1°	
Injury				No	Yes		
Mobility?*				Yes	No		

*is capable of walking unaided, walking with support or with crutches/walking frame

SATS-N FOR CHILDREN UNDER THE AGE OF 15 YEARS

Step by step

IF THE PATIENT NEEDS IMMEDIATE TREATMENT, SUCH TREATMENT SHALL BE INITIATED BEFORE THE SATS ASSESSMENT (current convulsions, hypoglycaemia etc.)

- Take a **brief medical history** from the patient / next of kin / health personnel or others
- Check the discriminator **list** to determine whether the patient has symptoms/signs that denote the priority level RED, ORANGE or YELLOW. Remember to check **footnotes** for details/definitions of terms!

> If the patient has a symptom listed under priority level RED in the discriminator list, there is no need to calculate TEWS to determine the priority level. The measurement of vital signs must not delay the patient receiving correct treatment as soon as possible. Vital signs are measured in the ambulance or in the accident and emergency department's treatment room as soon as possible.

- The priority level arrived at on the basis of the discriminator list is the lowest priority level the patient can be assigned to. If the patient's symptoms are not found in the discriminator list, TEWS determines which priority level the patient is assigned to.
- **Measure vital signs** and document the findings in the specified place in the relevant patient record. **Remember to note the time** when the measurement was taken!
- Remove clothing from the child's upper body to **assess respiration**. Are there **retractions** of the **chest, nasal flaring**, **grunting** or **use of accessory respiratory muscles**?
- The respiratory rate is counted for one minute.
- The heart rate is measured for 15 second and multiplied by 4. If the heart rate is irregular, measure for 30 seconds and multiply by 2. The heart rate can be measured by palpating the radial pulse (a. radialis), brachial pulse (a. brachialis), femoral pulse (a.femoralis), by auscultation of the heart or by using a pulse oximeter.
- **Measure the capillary refill time** by pressing a finger against the child's sternum so that the skin turns white for five seconds. Release and measure how long it takes for the colour to return, i.e. for the blood in the small blood vessels to flow back into the skin. **Capillary refill time is given in seconds.**


- Measure the blood pressure of children aged 13 years or older.

- Assess the patient's **level of consciousness** in relation to AVPU:

A – (alert) – the child is awake, plays and shows normal interest in its surroundings

V – (voice) – the child responds to touch, when spoken to and to voices in the room The child is listless or irritable. The child shows no interest in its surroundings and is not interested in playing. Babies do not wake up for meals. If the parent/guardian says that the child 'only sleeps', score as **V** or poorer (**P, U**).

P – (pain) – the child is somnolent and responds only to pain.

U – (unresponsive) – the child does not respond to voice or pain stimuli and is unconscious.

In cases of head injury, poisoning/intoxication or if the child is scored as **P** or **U**, the child shall be assessed using GCS. For children under the age of 5 years, use the Paediatric Glasgow Coma Scale (pGCS).

Paediatric Glasgow Coma Scale		
Eye opening	**Best verbal response**	**Best motor response**
4 Spontaneous	5 Alert, coos, babbles	6 Normal spontaneous movement/obeys commands
3 To verbal command	4 Irritable, cries, consolable	5 Localises pain / withdraws from touch
2 To pain	3 Inappropriate crying	4 Withdraws to pain Flexion, withdraws
1 No response	2 Sounds	3 Weak flexion to pain
	1 No response	2 Extension
		1 No response

- **Temperature** is measured in accordance with the applicable guidelines at all times and using the temperature measurements adopted by the section/department/health trust.
- Assess the patient's mobility – normal for the child's age or unable to move/walk normally.

Blood glucose shall be measured in all patients who

- have a reduced level of consciousness or are unconscious
- have known diabetes mellitus
- are convulsing or post-ictal

- **Calculate the total TEWS** and document it in the patient record.

- **Clinical discretion** – the discriminator list in SATS-N together with the vital signs score (TEWS) will identify many of the most common presenting symptoms/conditions. Nevertheless, situations may arise where health personnel have to use their clinical judgement as a supplement to the tool. For example, health personnel may wish to UPGRADE patients with congenital or chronic conditions or other circumstances to another priority level based on an overall assessment.

  When in doubt – UPGRADE! It is important to document *when* and *why* a patient is assigned to a higher priority level on the basis of health personnel's clinical discretion.
- **Set the priority level** to the higher of the discriminator list, TEWS or clinical discretion.
- **Only a doctor can downgrade a patient to a lower priority level than the one arrived at using SATS-N.**

Discriminator list, children under 15 years of age

RED PRIORITY LEVEL	ORANGE PRIORITY LEVEL	YELLOW PRIORITY LEVEL
Unconscious patient ①	**Allergic reaction,** *acute* ⑨Δ	**Baby < 2 months**
Haemorrhage, *major*	**Battery,** *swallowed*	
Burn ***> 10%, face/neck/inhalation*** or ***high-voltage circumferential*** *injury* ②	**Consciousness,** *reduced/lethargic*	**Burn,** *minor*
Fracture with **suspected vascular injury** ③	**Fracture:** ***compound*** or ***displaced***, or ***luxated joint*** ③	**Fracture,** *closed*
Cyanosis, central *(SpO_2 < 90%)* ④	**Chest pain,** *current* ⑩ Δ	
Fever in ***neutropenic*** or ***immunodeficient*** patients or ***babies < 3 months*** ⑤	**Dehydration,** *no urine past 12 hours*	**Dehydration,** *little urine in the last 12 hours*
Stroke/TIA, *symptoms < 6 hours* ⑥	**Stroke/TIA,** *symptoms 6–8 hours* ⑥	**Stroke/TIA,** *symptoms 8–24 hours* ⑥
Cardiac arrest, *current or resuscitated*	**Headache,** *peracute and intense* ⑪	
Head injury *with a GCS score reduced by 2 or more or abnormal pupil(s)* ⑦	**Head injury:** GCS score of 14–15 and one of the following: *epileptic seizure, neurological deficits, signs of skull fracture, shunt treatment or anticoagulation therapy / coagulation disorder* ⑦	Head injury: *GCS score 14–15* ⑦
Hypoglycaemia, ***blood glucose*** *< 3 mmol/l*	**Hyperglycaemia,** ***blood glucose > 11*** *mmol/l* and **shortness of breath** ⑫	
Convulsions, *current*	***Intoxication*** or ***poisoning*** ⑬ Δ	**Convulsions**, *now alert*
Airway, ***airway at risk, foreign body*** or ***intubated*** patient *(endotracheal or supraglottic)*	**Neurological deficits**, *acute*	
	Vomiting, ***fresh blood*** or ***bile-coloured***	**Vomiting** or **diarrhoea,** *persistent* ⑮
Trauma, *seriously injured patient* ②	**Pain**, ***acute*** and ***intense*** or ***inconsolable crying*** ⑭ Δ	**Pain,** *moderate*
Shortness of breath, ***very laboured/obstructive*** or ***apnoea*** ⑧		**Shortness of breath,** ***somewhat laboured/obstructive*** ⑧
	Eye injury, ***penetrating*** or ***caustic***	**NO FINDINGS IN THE DISCRIMINATOR LIST**
TEWS NOT REQUIRED – SEE LOCAL GUIDELINES		

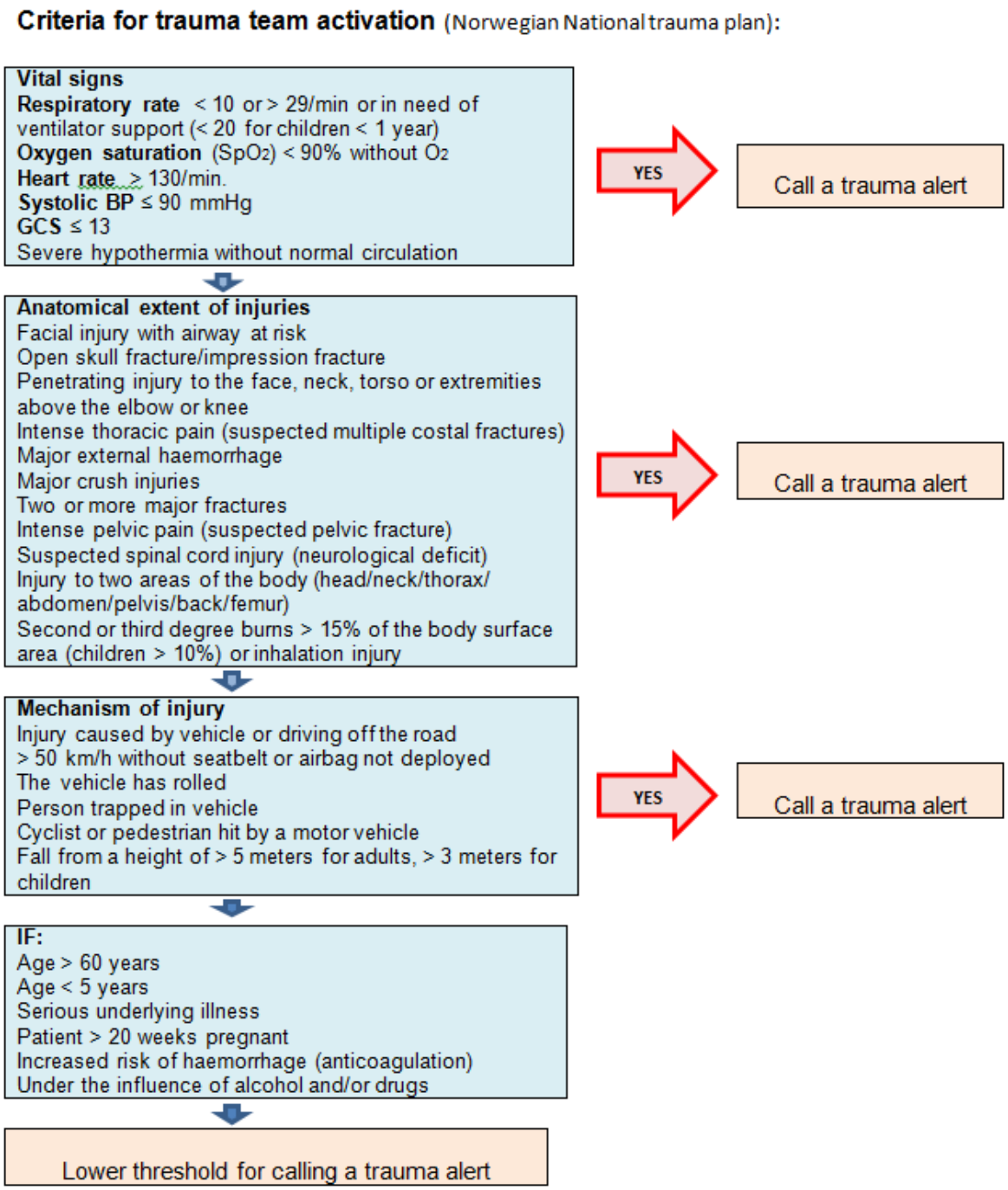
Footnotes, children under 15 years of age

① **Unconscious patient** – patients who are unresponsive (U) or respond only to pain (P)

Consciousness, reduced/lethargic:

- Patients who are lethargic, listless or irritable, but can be roused by touch/voice → **ORANGE** PRIORITY LEVEL
- Patients who have had **convulsions** are assessed using the above criteria. **If new convulsions → RED** PRIORITY LEVEL.

② **Trauma** – criteria for trauma team activation (Norwegian National trauma plan):



③ Fractures:

RED PRIORITY LEVEL:

- **Fracture with suspected vascular injury -** signs of ischaemia distal to the injury site: ***Pain – pale/poorly perfused skin – reduced*** *or* ***absent sensation – no pulse***. **An unstable pelvic fracture** is by definition a **suspected vascular injury.**

ORANGE PRIORITY LEVEL:

- **Femoral fracture, symptoms:**

  Rotational displacement, angulation, shortening or pathological movement. Pain over the fracture, i.e. no pain in the groin areas as with hip fractures. Such fractures can cause significant haemorrhage (1–2 litres), resulting in swelling of the soft tissue.

- **Major displacements, luxated joints and compound fractures.**

④ **Central cyanosis –** blue/cyanotic child is reason to suspect congenital heart defect or severe circulatory failure/oxygenation failure → **RED** PRIORITY LEVEL

⑤ **Fever in neutropenic or immunodeficient patients or babies < 3 months**

- Babies under three months with a fever could have sepsis.
  - If the baby is older than four weeks over the estimated due date and clearly has a cold or bronchiolitis, he/she is not prioritised on the basis of this symptom in the prioritisation list.

- Fever in neutropenic (a neutrophil count below 0.5) or immunodeficient patients is a condition most commonly found in cancer patients or patients on immunosuppressants, and these groups have an increased risk of rapidly developing sepsis.

⑥ **Stroke/TIA** with one or more of the following symptoms:

- Facial paresis
- Weakness of arm and/or leg
- Loss of ability to speak
- Loss of vision in one eye / visual field deficits

with a **duration of less than 6 hours**, with **symptoms** that are either **persistent** or **transient** (the patient can be asymptomatic on examination) → **RED** PRIORITY LEVEL

with symptoms lasting 6–8 hours → **ORANGE** PRIORITY LEVEL

8–24 hours → **YELLOW** PRIORITY LEVEL

If the patient **woke up in the morning with stroke symptoms** – consult the emergency medical communication centre/neurologist for guidelines on wake-up stroke. To be treated as **RED** PRIORITY LEVEL until a neurologist says otherwise.

⑦ Head injury:

- **Head injury** with a **GCS score of ≤ 13 –** see the criteria for trauma team activation
- **Head injury** with a **GCS score of 14–15** and <u>one of the following:</u> **posttraumatic epileptic seizure, focal neurological deficits, clinical signs of skull fracture, shunt treatment for hydrocephalus** or **anticoagulation therapy [8]/ coagulation disorder** → **ORANGE** PRIORITY LEVEL
- **Head injury** with a **GCS score of 14** without risk factors → **YELLOW** PRIORITY LEVEL
- **Head injury** with a **GCS score of 15** and **<u>one of the following:</u>** suspected/confirmed **loss of consciousness** or **repeated vomiting → YELLOW** PRIORITY LEVEL
- **Head injury** with a **GCS score of 15** without risk factors → **GREEN** PRIORITY LEVEL

[8] E.g. warfarin, NOACs (dabigatran, rivaroksaban, apiksiban)

⑧ **Shortness of breath:** (only one criterion from the category you choose needs to be met)

Shortness of breath, **very laboured/obstructive** or **apnoea → RED** priority level:

- A history of apnoea (episodes of cessation of breathing)
- Severe inspiratory and/or expiratory stridor
- Obstructive with significantly forced exhalation (wheezing, drawn-out expiration)
- Severe retractions or significant use of accessory respiratory muscles
- Tired and exhausted, too tired to speak, cry or resist
- Dyspnoea during speech

Shortness of breath, **somewhat laboured/obstructive → YELLOW** priority level:

- Slight inspiratory stridor
- Panting or obstructive with somewhat forced exhalation (wheezing, drawn-out expiration)
- Slight retractions
- Good general state of health, resists

⑨ **Allergic reaction, acute → ORANGE** priority level

BUT: in case of suspected **anaphylaxis** with **stridor / wheezing when breathing / asthma attack / swelling of the airways,** or **persistent vomiting** or if **circulation is affected** with reduced level of consciousness, rapid heart rate and low BP / capillary refill time ≥3 seconds → **RED priority level**.

Note! If an allergic reaction (skin, airways, eyes, stomach) has lasted for more than 24 hours and the vital signs are normal → **GREEN** priority level

⑩ **Chest pain:** If STEMI (ST-elevation myocardial infarction), heart rate >200 → **RED** PRIORITY LEVEL, see SATS-N for adults

⑪ **Headache, peracute and intense** – out of the blue – reason to suspect **subarachnoid haemorrhage**

⑫ **Hyperglycaemia:** Blood glucose level of 11 or more and shortness of breath / rapid respiratory rate are reason to suspect ketoacidosis (particularly in patients with Type 1 diabetes)

⑬ **Intoxication / poisoning → ORANGE** PRIORITY LEVEL**.**

Contact the Norwegian Poison Information Centre by calling 22591300 for advice on further management/priority level if a patient has ingested medication, plants, chemicals or other potentially poisonous substances.

RED PRIORITY LEVEL if:

- Unconscious patient
- Carbon monoxide poisoning (CO) – for example in connection with fires, heating or cooking with firewood/gas/propane, generator use in an enclosed space
- Carbon dioxide poisoning (CO_2)
- Hydrogen sulphide poisoning (H_2S) / manure/sewer gas – for example in connection with silo/farm accidents
- Cyanide poisoning – for example in connection with fires

⑭ **Pain:** Covers all causes of intense acute pain, including intense abdominal pain/acute abdomen → **ORANGE** PRIORITY LEVEL

Exceptions: Acute, intense pain of the scrotum with onset during the **past ten hours** is reason to suspect **testicular torsion → RED** PRIORITY LEVEL

Patients in **moderate** pain do not need acute pain relief → **YELLOW** PRIORITY LEVEL.

⑮ **Vomiting/diarrhoea:**

- Persistent vomiting or diarrhoea entails a risk of severe dehydration. Check urine output and, if relevant, consider setting the priority level in accordance with ***Dehydration*** in the discriminator list.

TEWS, children under 15 years of age

 Different TEWS tables apply depending on the child's age. Make sure that you use the correct one.

TEWS, newborn < 1 month

TEWS < 1 mth	3	2	1	0	1	2	3
Resp. rate	< 25		25–39	40–55	56–64	65–79	≥ 80
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 85		85–99	100–160	161–169	170–189	≥ 190
Capillary refill time				1–2 sec.	3 sec.		≥ 4 sec.
AVPU				**A:** Alert, normal contact	**V:** Reacts to voice	**P:** Reacts to pain	**U:** Unresponsive
Temp.		Cold or < 36°		36°–38°		≥ 38.1°	
Mobility				Normal for age		Unable to move as normal	

TEWS, baby 1–12 months

TEWS 1–12 mths	3	2	1	0	1	2	3
Resp. rate	< 20		20–34	35–45	46–54	55–69	≥ 70
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 80		80–99	100–160	161–169	170–189	≥ 190
Capillary refill time				1–2 sec.	3 sec.		≥ 4 sec.
AVPU				**A:** Alert, normal contact	**V:** Reacts to voice	**P**: Reacts to pain	**U:** Unresponsive
Temp.		Cold or < 36°		36°–38°	38.1°–39°	≥ 39.1°	
Mobility				Normal for age		Unable to move as normal	

TEWS, children 1–3 years

TEWS 1–3 yrs	3	2	1	0	1	2	3
Resp. rate	< 20		20–24	25–35	36–44	45–59	≥ 60
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 70		70–89	90–130	131–139	140–159	≥ 160
Capillary refill time				1–2 sec.	3 sec.		≥ 4 sec.
AVPU		Acute confusion		A: Alert, normal contact	V: Reacts to voice	P: Reacts to pain	U: Unresponsive
Temp.		Cold or < 36°		36°–38°	38.1°–39°	≥ 39.1°	
Mobility				Normal for age		Unable to move as normal	

TEWS, children 4–6 years

TEWS 4–6 yrs	3	2	1	0	1	2	3
Resp. rate	< 15		15–19	20–24	25–29	30–44	≥ 45
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 60		60–69	70–120	121–129	130–149	≥ 150
Capillary refill time				1–2 sec.	3 sec.		≥ 4 sec.
AVPU		Acute confusion		**A:** Alert, normal contact	**V:** Reacts to voice	**P:** Reacts to pain	**U:** Unresponsive
Temp.		Cold or < 36°		36°–38°	38.1°–39°	≥ 39.1°	
Mobility				Normal for age		Unable to walk as normal	

TEWS, children 7–12 years

TEWS 7–12 yrs	3	2	1	0	1	2	3
Resp. rate	< 14		14–18	19–22	23–29	30–39	≥ 40
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 60		60–69	70–110	111–119	120–139	≥ 140
Capillary refill time				1–2 sec.	3 sec.		≥ 4 sec.
AVPU		Acute confusion		**A:** Alert, normal contact	**V:** Reacts to voice	**P:** Reacts to pain	**U:** Unresponsive
Temp.		Cold or < 36°		36°–38°	38.1°–39°	≥ 39.1°	
Mobility				Normal for age		Unable to walk as normal	

TEWS, young people 13–14 years

TEWS 13–14 yrs	3	2	1	0	1	2	3
Resp. rate	< 9		9–13	14–19		20–29	≥ 30
SpO_2	< 90% with O_2	> 90% with O_2	< 95 % without O_2	≥ 95% without O_2			
Heart rate	< 45		45–54	55–95	96–114	115–129	≥ 130
Syst. BP	≥ 70	71–80	81–100	101–180		≥ 180	
AVPU		Acute confusion		**A:** Alert, normal contact	**V:** Reacts to voice	**P:** Reacts to pain	**U:** Unresponsive
Temp.		Cold or < 36°		36°–38°	38.1°–39°	≥ 39.1°	
Mobility				Normal for age		Unable to walk as normal	

REFERENCES

Definisjonskatalog for den akuttmedisinske kjede, 2. utgave, 31.07.2012, Kith.no.
http://www.kith.no/upload/1983/Defkat-akuttmed_kjede-v1.1-31072012.pdf

Hypertension in infancy: diagnosis, management, and outcome. Dionne JM, Abitbol CL, Flynn JT. Pediatr Nephrol 2011. *http://link.springer.com/article/10.1007%2Fs00467-010-1755-z*

Lovdata, Forskrift om krav til akuttmedisinske tjenester utenfor sykehus, §3.
https://lovdata.no/dokument/LTI/forskrift/2005-03-18-252

Metodebok i akutt indremedisin , Haukeland universitetssjukehus, 7. utgave, mai 2016 (Book).

Nelson textbook of pediatrics 19th edition, tabell side 280 (Book).

Normal range of heart rate and respiratory rate in children from birth to 18 years of age: a systematic review of observational studies. Fleming S, Thomson M,Stevens R, et al. M Lancet 2011.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3789232/

NOU 1998:9: "Hvis det haster…. Faglige krav til akuttmedisinsk beredskap".
https://www.regjeringen.no/contentassets/8087d548c0a04059aa88f416fe19f3cc/no/pdfa/nou199819980009000dddpdfa.pdf

Pediatric Advanced Life Support Provider Manual. Ralston M, et al (Eds), American Heart Association, Subcommittee on Pediatric Resuscitation, Dallas, 2006, p.61. (Book)
For children, hypotension is defined as a systolic blood pressure that is less than the fifth percentile of normal for age:
Less than 60 mmHg in term neonates (0 to 28 days)
Less than 70 mmHg in infants (1 month to 12 months)
Less than 70 mmHg + (2 x age in years) in children 1 to 10 years
Less than 90 mmHg in children 10 years of age or older

Practice guideline EM014, Implementation of the South African Triage Scale. Emergency Medicine Society of South Africa. Mars 2010, revidert februar 2012. *http://emssa.org.za/documents/em014.pdf*

The effectiveness of the South African Triage Score (SATS) in a rural emergency department. Rosedale et al. South African Med J Juli 2011. *http://www.samj.org.za/index.php/samj/article/view/4697/3382*

The Fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. National Heart, Lung and Blood Institute. National Institutes of Health. May 2004.
http://www.samj.org.za/index.php/samj/article/view/4697/3382

The South African Triage Scale (SATS) Emergency Medicine Society of Soutn Africa. http://emssa.org.za/sats/

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3) Singer, M. et al, *JAMA*.

2016;315(8):801-810. doi:10.1001/jama.2016.0287. http://jamanetwork.com/journals/jama/fullarticle/2492881

Nasjonal Traumeplan – Traumesystem I Norge 2015 (Norwegian National trauma plan?; www.traumeplan.no

Vital signs for children at triage: a multicentre validation of the revised South African Triage Scale (SATS) for children. South African Med J Mai 2013. http://www.samj.org.za/index.php/samj/article/view/6877/5056


Ambulanseinngang
AMBUL