

# **THE CAPE TRIAGE GROUP**

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# **CAPE TRIAGE SCORE HOSPITAL PROVIDER MANUAL**

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## PREFACE

In 2004, the Cape Triage Group (CTG) was convened under the auspices of the joint Division of Emergency Medicine at the Universities of Cape Town and Stellenbosch. The aim of the CTG was to produce a triage score for use throughout South Africa. The group was multi-disciplinary and comprised doctors, nurses and paramedics. The result of the CTG's activities is the Cape Triage Score (CTS), a physiology and symptom based score which prioritises into one of five colours and can be used both in hospital Emergency Units and pre-hospital. The CTS will be implemented throughout the Western Cape from January 2006, in three versions: adult, paediatric and infant.

A sub-group of the CTG worked to establish a training programme for the nurses and doctors who will be using this tool. This manual (and the training course that goes with it) is the result of that group's work. The provider course for those staff who will be doing the actual triage consists of a half day theoretical training, a half day of clinical scenarios and on the job refresher training.

The members of the training sub group, and authors of this manual, are:

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They are to be commended for their continuing commitment to the development of triage in South Africa, their contribution to the CTS, and for this excellent manual. On behalf of the CTG, I hope that you enjoy reading this manual and attending the training course that goes with it. Please feed back to us on any suggestions of improvements, and on your experience using the CTS. Emails may be directed to [capetriage@bvr.co.za](mailto:capetriage@bvr.co.za) – these will be used as part of our ongoing quality assurance and monitoring process. Happy triaging!

**Dr Lee Wallis**  
Chair of the Cape Triage Group  
Cape Town, 2005

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# 1: INTRODUCTION TO TRIAGE

## Terminology and important concepts

1. **Triage**, from the French word "trier", literally means: "to sort". The aim is to bring "the greatest good to the greatest number of people" – this is achieved through prioritising limited resources to achieve the greatest possible benefit. Patients are sorted with a scientific triage scale in order of urgency - the end result is that the patient with the greatest need is helped first.
2. **Patient to triage**: when a patient appears relatively stable and is able to mobilise him/herself to the designated triage area. This will be the type of triage used in most of the cases.
3. **Triage to patient**: here the patient is usually unstable. The patient is unable to mobilise him/herself to the designated triage area and should be referred directly to the resus room. Triage should be performed at the bedside and documented in retrospect. This type of triage will be used less often.
4. **TEWS**: Triage Early Warning Score.
5. **High energy transfer**: in our context this refers to excessive acceleration - deceleration injuries. Examples are: fall from a height ( $\geq 2$  meter) and high speed motor vehicle accidents ( $\geq 50$  km/h).
6. **Threatened limb**: this refers to any acute insult leading to a pale, pulseless, cold limb and includes a sensory / motor deprived limb.
7. **Facial / inhalation burns**: a high suspicion for inhalation burns must be suspected when the following information is present from the history / observations from a patient who has been exposed to a fire: entrapment in a confined space, skin burns above the shoulder, searing of facial hair (nose hairs, eye brows and lashes), carbonaceous material in mouth or on hard and soft palate, cough producing soot/ black coloured sputum.
8. **Physiology**: refers to the normal functioning of the different body systems. Some of the physiology can be readily measured (e.g. pulse, blood pressure, respiratory rate, temperature).
9. **Streaming**: the use of dedicated healthcare resources for each priority group of patients. For green patients, this may be a doctor or nurse practitioner: this person needs their own space to see these patients.
10. **Anteroom**: the front room of the emergency unit.
11. **Pain**: **Severe** pain is unbearable, the worst pain the patient has ever felt. It may be associated with sweatiness, paleness, and altered level of consciousness. **Moderate** pain is intense, but bearable. **Mild** pain is any other pain. Remember to make a pain assessment on **every patient** that you see.

## The benefits of triage

The aim of an efficient triage system is:

1. To expedite the delivery of time-critical treatment for patients with life-threatening conditions,
2. To ensure that all people requiring emergency care are appropriately categorized according to their clinical condition,
3. To improve patient flow
4. To improve patient satisfaction
5. To decrease the patient's overall length of stay
6. To facilitate streaming of less urgent patients
7. To be user-friendly for all levels of health care professionals.

By introducing triage at a public urban hospital in Cape Town, mean waiting times for patients coded as red was reduced by almost 600% (583.78 % to be exact). Waiting times for patients coded green did not show a remarkable reduction although the mean overall reduction for all codes was 160% (161.64%).

## Nursing triage

Nurse-based triage has been successfully implemented worldwide in the countries of North America, Europe, the Middle East and Australasia since the development of Emergency Medicine as a speciality about 30 years ago.

**Table 1** shows the number of medical practitioners and nurses per unit of population in South Africa, compared to some "developed" countries. Given the significantly lower doctor : nurse ratio in South Africa compared to countries where nurse triage is widely practiced, it is apparent that the development of nurse-based triage should be a priority in our setting.

Country	Rate per 100,000 population/ year		
	Doctors	Nurses	Doctor: Nurse ratio
South Africa	56.3	471.2	1 : 8.0
Canada	229	897	1 : 4.0
Australia	240	830	1 : 3.4
Israel	385	613	1 : 1.6
UK	164	479	1 : 3.0

**Table 1: Doctor and nurse rates per 100,000 population per annum for selected countries**

Nurses currently play no part in the decision-making, although they are the first medical contact for the patients attending the EU in most instances. In the same public urban hospital referred to earlier the correlation between doctor and adequately trained ENAs (Enrolled Nursing Auxiliaries) was comparable with international standards of nursing triage.

The triage method should be known and applied by all health care professionals involved in the EU. The triage provider can be the medical officer, the registered nurse, the staff nurse or the ENA. The purpose of this training program is to empower the individual who participates with the knowledge to triage. It will only be through practice and repetition that a provider will become skilled with triage. Successful providers are therefore encouraged to participate in triaging as frequently as possible in order to stay in practice and up to date.

Triage is simple to do: **table 2** shows the equipment needed for the process.

<b>Location</b>	<b>Equipment</b>	<b>Additional equipment</b>
Privacy: Screen, partition or separate room.	Gloves, face masks & other barrier protective devices	Pulse oximeter
Safety: Security/protected	Wall clock	ECG
Size of area: Walkers, wheelchairs, stretchers	Low reading electronic/mercury thermometer	Finger prick glucotest & finger prick haemoglobin
Accessibility	Electronic blood pressure & pulse analyser (Dynamap or digital)	Urine dipsticks & urine pregnancy tests
	Dry dressings/ bandages	Urine pregnancy tests

**Table 2: Requirements for adequate / efficient triage**

## 2: THE TRIAGE TOOL

### Three versions of the CTS

There are three versions of the CTS, depending on whether the patient is an adult or not. Adults have their own version and this is the one used throughout this training manual. However, children have different values of heart rate, respiratory rate and blood pressure. There are two children's versions: one for **infants** (50cm to 95cm – birth to almost 3 years), and one for other **children** (96cm to 150cm – 3 years to around 12 years). Older children, where you are unsure which form to use, should be measured. If they are over 150cm then the adult version should be used. You will be shown the three versions on the training day.

### The TEWS calculator

The CTS consists of 2 parts: the TEWS (part 1) and the discriminator list (part 2). The discriminator list follows after the TEWS. The provider needs to calculate the TEWS before moving on to the discriminator list. The first part (or the **TEWS**) is shown in **table 3 (adult version)**.

ADULT TRIAGE SCORE								
	3	2	1	0	1	2	3	
<b>Mobility</b>				Walking	With Help	Stretcher/ Immobile		<b>Mobility</b>
<b>RR</b>		less than 9		9-14	15-20	21-29	more than 29	<b>RR</b>
<b>HR</b>		less than 41	41-50	51-100	101-110	111-129	more than 129	<b>HR</b>
<b>SBP</b>	less than 71	71-80	81-100	101-199		more than 199		<b>SBP</b>
<b>Temp</b>		less than 35		35-38.4		38.5 or more		<b>Temp</b>
<b>AVPU</b>				Alert	Reacts to Voice	Reacts to Pain	Unresponsive	<b>AVPU</b>
<b>Trauma</b>				No	Yes			<b>Trauma</b>
over 12 years / taller than 150cm								

**Table 3. The adult TEWS calculator**

FYI:

- ✓ the MEWS score was first designed and used in Wrexham Maelor Hospital, Wrexham, UK to monitor medical inpatients. It was found to be effective in identifying patients who were deteriorating in the medical wards. This allowed for an early intervention and improved outcome.
- ✓ It was also found that **respiratory rate was the most important physiological parameter** of all the discriminators used to make up the MEWS
- ✓ The score has since been adapted for use in general surgery and was accepted as safe. effective by the Royal Colleges of Surgeons, London

In order to generate a total score, the provider has to observe the basic vital signs of the patient. Each vital sign monitors a different physiological system:

- **Blood pressure** and **Heart rate** monitor the **cardiovascular** system (heart and blood flow). You as the provider are interested in the **systolic** value only. That is the **top** value of the blood pressure (BP=**120**/80, systolic BP or SBP=**120**)
- **Respiratory rate** monitors the **respiratory** system (lungs)
- **Temperature** monitors **thermoregulatory** system (infections, hypothermia)
- **AVPU** monitors the **central nervous system** (brain)
- **Mobility** monitors the **musculoskeletal** system (bones and muscles)
- **Trauma** refers to the presence of ANY injury (bump, bruise, cut etc)

By comparing the observed basic vitals of the patient with a parameter on the TEWS calculator (horizontally) a score can be read off (vertically). These scores are added together which gives the provider a total TEWS. See **example 1**.

**Example 1:**

Patient in <b>wheelchair</b>	With help scores	1
Respiratory rate= <b>18</b>	15-20 scores	1
Heart rate= <b>118</b>	111-129 scores	2
Blood pressure= <b>208/112</b>	>200 scores	2
Temperature= <b>36.5</b>	35-38.5 scores	0
Patient <b>Alert</b>	Alert scores	0
No <b>Trauma</b>	Scores	0
	<b>Total</b>	<b>6</b>

**FYI: Calculating the respiratory rate**  
 Count the amount of breaths taken by the patient over 30 seconds and multiply by 2

INFANT TRIAGE SCORE								
	3	2	1	0	1	2	3	
<b>Mobility</b>				Normal for age		Stretcher/ Immobile		<b>Mobility</b>
<b>RR</b>	less than 20	20-25		26-39		40-49	50 or more	<b>RR</b>
<b>HR</b>	less than 70	70-79		80-130		131-159	160 or more	<b>HR</b>
<b>SBP</b>	less than 60	60-69		70-110		111 or more		<b>SBP</b>
<b>Temp</b>		less than 35		35-38.4		38.5 or more		<b>Temp</b>
<b>AVPU</b>				<u>A</u> lert	Reacts to <u>V</u> oice	Reacts to <u>P</u> ain	<u>U</u> nresponsive	<b>AVPU</b>
<b>Trauma</b>				No	Yes			<b>Trauma</b>
younger than 3 years / smaller than 95cm								

**Table 4. The infant TEWS calculator**

CHILD TRIAGE SCORE								
	3	2	1	0	1	2	3	
<b>Mobility</b>				Walking	With Help	Stretcher/ Immobile		<b>Mobility</b>
<b>RR</b>	less than 15	15-16		17-21	22-26	27 or more		<b>RR</b>
<b>HR</b>	less than 60	60-79		80-99	100-129	130 or more		<b>HR</b>
<b>SBP</b>	less than 70	70-79		80-130	131-149	150 or more		<b>SBP</b>
<b>Temp</b>		less than 35		35-38.4		38.5 or more		<b>Temp</b>
<b>AVPU</b>				<u>A</u> lert	Reacts to <u>V</u> oice	Reacts to <u>P</u> ain	<u>U</u> nresponsive	<b>AVPU</b>
<b>Trauma</b>				No	Yes			<b>Trauma</b>
3 to 12 years old / 96 to 150 cm tall								

**Table 5. The child TEWS calculator**

### **The discriminator list**

The second part of the discriminator list is shown in **table 6**. This is the part that generates the actual triage colour (red, orange, yellow, green, blue) which will determine severity level and essentially also when the patient will be attended to. As with the TEWS, there are separate versions of this for infants, children and adults as seen in **table 7 and 8** respectively.

The TEWS score will only identify and classify a patient into an appropriate triage code if the physiology of the patient is altered from normal. The TEWS will be effective for most of the cases presenting to the triage provider.

There are however some **discriminators** that require **special attention**. It has been found that physiology alone does not pick up and classify patients with these discriminators safely and effectively. These discriminators therefore serve as a **safety net** for those patients with severe enough pathology to be seen more urgently, but whose physiology did not respond to the insult and therefore did not generate an urgency appropriate TEWS. They are reclassified after the TEWS has been calculated. This process is explained in the next section.



Colour	RED	ORANGE	YELLOW	GREEN	BLUE	
TEWS	7 or more	5-6	3-4	0-2	DEAD	
Target time to treat	Immediate	less than 10 mins	less than 60 mins	less than 240 mins		
Mechanism of injury		High energy transfer				
Presentation		Shortness of breath - acute			DEAD	
		Coughing blood				
		Chest pain				
		Haemorrhage - uncontrolled				Haemorrhage - controlled
	Seizure - current	Seizure - post ictal				
		Focal neurology - acute				
		Level of consciousness reduced				
		Psychosis / Aggression				
		Threatened limb				
		Dislocation - other joint	Dislocation - finger or toe	ALL		
		Fracture - compound	Fracture - closed	OTHER		
		Burn - face / inhalation	Burn over 20%	Burns - other		PATIENTS
			Burn - electrical			
	Burn - circumferential					
	Burn - chemical					
		Poisoning / Overdose	Abdominal pain			
Hypoglycaemia - glucose less than 3	Diabetic - glucose over 11 & ketonuria	Diabetic - glucose over 17 (no ketonuria)				
	Vomiting - fresh blood	Vomiting - persistent				
	Pregnancy & abdominal trauma or pain	Pregnancy & trauma				
		Pregnancy & PV bleed				
Pain		Severe	Moderate	Mild		
	Senior Healthcare Professional's Discretion					

**Table 6. The adult discriminator list**

COLOUR	RED	ORANGE	YELLOW	GREEN	BLUE	
TEWS	7 or more	5-6	3-4	0-2	DEAD	
Target time to treat	Immediate	less than 10 mins	less than 60 mins	less than 240 mins		
Mechanism of injury		High energy transfer				
Presentation	Drooling	Shortness of breath				
	Stridor	Wheeze				
		Haemorrhage - uncontrolled	Haemorrhage - controlled			
	Seizure - current	Seizure - post ictal				
			Focal neurology - acute			
			Level of consciousness reduced			
			Floppy infant			
			Purpura			
			Dislocation - other joint	Dislocation - finger or toe	ALL OTHER PATIENTS	DEAD
			Fracture - compound	Fracture - closed		
				Unable to weight bear		
	Burn - face / inhalation		Burn over 10%	Burn - other		
			Burn - electrical			
			Burn - circumferential			
			Burn - chemical			
		Poisoning / Overdose	Abdominal pain			
Hypoglycaemia - glucose less than 3						
		PR bleeding	Vomiting - persistent			
			Not feeding			
			Not urinating			
			Inappropriate history			
			Prolonged or uninterrupted crying			
Pain		Severe	Moderate	Mild		
	Senior Healthcare Professional's Discretion					

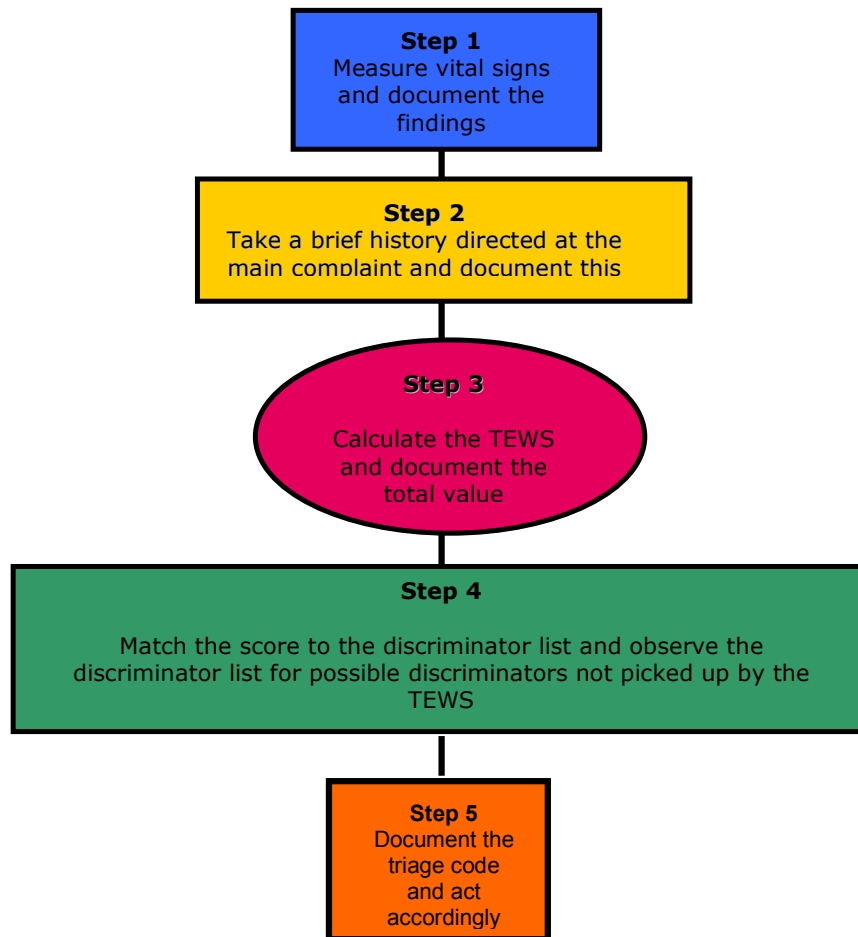
Table 7 . The infant discriminator list

COLOUR	RED	ORANGE	YELLOW	GREEN	BLUE	
TEWS	7 or more	5-6	3-4	0-2	DEAD	
Target time to treat	Immediate	less than 10 mins	less than 60 mins	less than 240 mins		
Mechanism of injury		High energy transfer				
Presentation	Drooling	Shortness of breath				
		Stridor				
		Wheeze				
		Haemorrhage - uncontrolled	Haemorrhage - controlled			
	Seizure - current	Seizure - post ictal				
		Focal neurology - acute				
		Level of consciousness reduced				
		Exhaustion				
		Purpura				
		Dislocation - other joint	Dislocation - finger or toe			ALL
		Fracture - compound	Fracture - closed			OTHER
	Burn - face / inhalation	Burn over 10%	Burn - other			PATIENTS
		Burn - electrical				
		Burn - circumferential				
		Burn - chemical				
	Poisoning / Overdose	Abdominal pain				
Hypoglycaemia - glucose less than 3	Diabetic - glucose over 11 & ketonuria	Diabetic - glucose over 17 (no ketonuria)				
	PR bleeding	Vomiting - persistent				
		Inappropriate history				
Pain		Severe		Moderate	Mild	
	Senior Healthcare Professional's Discretion					

**Table 8. The child discriminator list**

### 3: STEPWISE APPROACH TO THE USE OF THE CTS

**Figure 1** shows how simple it is to calculate the triage code for a patient by simply following the stepwise approach. This approach allows the triage provider to code patients both effectively and safely in the minimum time period. Triage providers should always use this approach unless directed otherwise by a senior health care professional.



**Figure 1. The stepwise approach for triage providing**

#### **Step 1: The vitals**

The first step is to perform the observations required by the TEWS.

1. The triage provider can use a mechanical blood pressure/ heart rate analyser (Dynamap) or a manual blood pressure cuff to perform the first two vital signs.
2. The respiratory rate needs to be calculated by counting the patient's breaths for 30 seconds and then multiplying by two.
3. The temperature is measured using either an electronic or mercury thermometer (preferably a low-reading thermometer).
4. AVPU is observed by talking (verbal stimulus) to the patient, or by producing a painful stimulus if no response is observed by talking. If there is no response to either verbal or pain stimuli the patient is labelled as unresponsive.

FYI:  
AVPU concerns the **highest response** level observed. If a patient is **not alert** he/she will either respond **only** to verbal/ painful stimuli or **not at all**.

5. Mobility is observed by noting the mode in which the patient has to be mobilised

FYI:  
If a patient is **not walking** or **not on a stretcher**, he/she is assisted (**with help**).

6. Trauma is present if there is ANY injury to the patient.

### Step 2: The history

The history concerns the **main** presenting complaint. This information can be gained by questioning the patient (or escort if the patient is unable to give a history) or by reading a referral letter. The triage provider should always ask the patient what their emergency is. This question will assist the provider in finding the core of the presenting complaint. It will also point out non emergencies. This decision should however not be taken until the whole stepwise approach has been completed.

FYI:  
Always ask the question: **What is your emergency?**

The history along with the vitals now has to be **documented**.

### Step 3: The TEWS calculator

Look at **example 1** again:

- Patient in **wheelchair**
- Respiratory rate= **18**
- Heart rate= **118**
- Blood pressure= **208/112**
- Temperature= **36.5**
- Patient **Alert**
- No **Trauma**

Score	3	2	1	0	1	2	3
<b>Mobility</b>				Walking	With help	Stretcher	
Patient in wheelchair. The patient is not walking on his/her own or on a stretcher. He/she is assisted (wheelchair in this case but could just as well be a crutch, kerie, walking aid or even assisted by another person). We will therefore score <b>1</b> for mobility.							

Score	3	2	1	0	1	2	3
<b>Respiratory rate</b>		Less than 9		10-14	15-20	21-29	More than 29
Respiratory rate= 18. The respiratory rate is between 15 and 20. We will therefore score the patient <b>1</b> for respiratory rate							

Cape Triage Score

Score	3	2	1	0	1	2	3
<b>Heart rate</b>		Less than 41	41-50	51-100	101-110	111-129	More than 129

Heart rate= 118. The heart rate is between 111 and 129. We will therefore score the patient **2** for heart rate

Score	3	2	1	0	1	2	3
<b>Systolic BP</b>	Less than 71	71-80	81-100	101-199		More than 199	

Blood pressure= **208/112**. The systolic is more than 199. We will therefore score the patient **2** for systolic BP

Score	3	2	1	0	1	2	3
<b>Temp</b>		Less than 35		35-38.4		More than 38.5	

Temperature= 36.5°. The temperature is between 35° and 38.5° (35- 38.5). We will therefore score the patient **0** for temperature

Score	3	2	1	0	1	2	3
<b>AVPU</b>				Alert	Reacts to Voice	Reacts to Pain	Unresponsive

Patient Alert. The patient is alert. We will therefore score **0** for AVPU

Score	3	2	1	0	1	2	3
<b>Trauma?</b>				No	Yes		

No Trauma. We will therefore score **0** for Trauma

**The calculation:** Simply write down all your findings and add the scores to generate the TEWS total. **Table 9** below is a section of the observation sheet used by the triage provider to triage this patient. The provider has already completed both step 1 and step 2 and has calculated the TEWS total (step 3).

Parameter:	Finding:	Score:	Date: 27/05/2005	History:
<b>Mobility</b>	With help	1		<i>Patient arrived on a wheelchair and complained of weakness on the left side of the body. The patient is a known hypertensive and diabetic. The patient has a Glucotest value of 1.5 on finger prick testing.</i>
<b>Respiratory Rate</b>	18	1		
<b>Heart Rate</b>	118	2		
<b>Systolic BP</b>	208	2		
<b>Temperature</b>	36.5	0		
<b>AVPU</b>	Alert	0		
<b>Trauma?</b>	No	0		TEWS total: 6

Step 1. measure

Step 2: History

Step 3: calculate

**Table 9. Section of observation sheet showing vitals, history and TEWS total for example 1**


### **Step 4: The discriminator list**

Now that the TEWS total has been calculated the provider can move on to the second part of the triage coding which concerns the discriminator list. Step 4 can be easily achieved by dividing it up into two additional steps.

#### **A. The TEWS total and the triage colour code:**

The TEWS total has to be matched with a specific triage colour code. Compare the TEWS total to the triage colour code references. Look at example 1 again. In step 3 the triage provider calculated the TEWS total to be six (6). Looking at our discriminator list we notice that a TEWS total of between five and six is an ORANGE triage code.

Triage code for  
Example 1  
TEWS= 6



COLOUR	RED	ORANGE	YELLOW	GREEN	BLUE
TEWS	7 or more	5 to 6	3 to 4	0 to 2	

#### **B. The discriminators:**

After the triage code according to the TEWS has been selected, the triage code along with the discriminators listed in the same column, get covered by the triage provider's right hand. The column(s) to the left of the provider's hand are now examined and compared with the history taken in step 2. If there is a discriminator listed to the left of the provider's hand that corresponds with the history taken from the patient, the triage code is changed to the corresponding code of the column that discriminator was found in. If no discriminator is found, the triage colour code according to the TEWS is used.

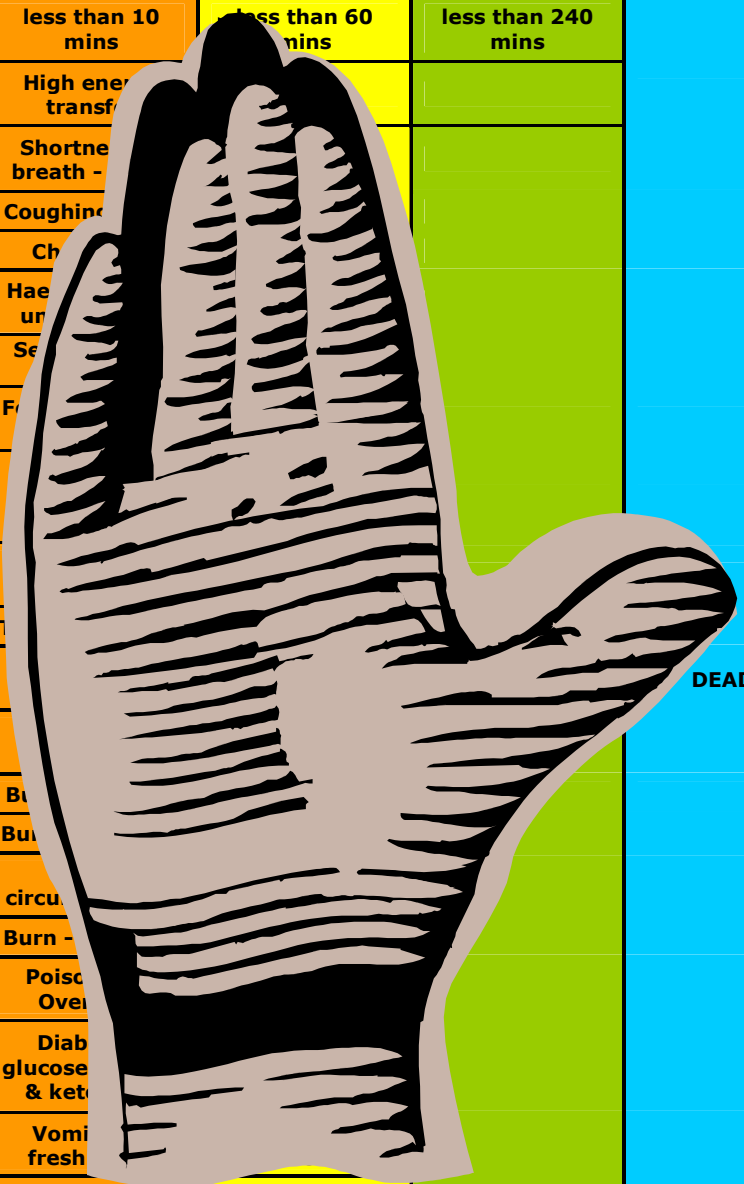
FYI:

The triage provider can now also prompt specific questions to the patient about the discriminators on the part of the list not covered by the provider's right hand

Consider example 1 again. The TEWS was six, which corresponds to a triage colour code ORANGE. We learned from the history that the patient is a diabetic with a finger prick glucotest measuring 1.5. By covering the orange category now with the provider's right hand the column to the left can be compared with the patient's history.

It is now revealed (see below) that the patient is **hypoglycaemic** with a glucotest less than 3. Hypoglycaemia falls in the RED triage code and the patient is therefore **triaged up** from ORANGE (this is what the TEWS of six indicated) to a triage code RED (as the discriminator list indicated).

Colour	RED	ORANGE	YELLOW	GREEN	BLUE
TEWS	7 or more	5-6	3-4	0-2	DEAD
Target time to treat	Immediate	less than 10 mins	less than 60 mins	less than 240 mins	
Mechanism of injury		High energy transf			
Presentation		Shortne breath -			
		Coughing			
		Ch			
		Hae un			
	Seizure - current	Se			
		F			
		T			
	Burn - face / inhalation	B Bu circu Burn -			
		Poisc Ove			
	Hypoglycaemia <3	Diab glucose & ket			
	Vomi fresh				
	Pregnancy & abdominal trauma or pain	Pregnancy & trauma			
		Pregnancy & PV bleed			
Pain		Severe	Moderate	Mild	
Senior Healthcare Professional's Discretion					





### **Step 5: The final triage code**

After step 4, the final triage coding is documented along with the patient's observations. The patient can now be referred for management by the attending doctor. The triage code is always the highest triage code derived from first calculating the TEWS (step 1- 3) and then analysis of the discriminator list (step 4).

**Triaging up** is essential to the process and must be done where discriminators out-triage the TEWS. **Triaging down** is not be part of the triage provider's duty. Triaging down can only be done by the senior health care provider (doctor) and will then be his / her responsibility.

FYI:

The triage provider must document who and when a senior health care professional changes the triage category of any patient

## 4: MANAGEMENT AND TRIAGE AIDS

Management of the patient starts when the triage provider's analysis starts. It is therefore critical that this management continues after the triage process has been completed. **Table 10** indicates the appropriate management of the different triage categories by the triage provider.

COLOUR	Management
RED	Refer to the resuscitation room for <b>emergency</b> management
ORANGE	Refer to the anteroom for <b>urgent</b> management
YELLOW	Refer to the anteroom for management
GREEN	Patient for potential <b>streaming</b>
BLUE	Refer to doctor for certification

**Table 10. Appropriate management of the different triage codes**

It is also possible for the triage provider to commence management when treatment is readily available and the provider's registration / qualification allows the intervention. Appropriate interventions directed at observed abnormalities during triage decreases the patient's morbidity and increases patient satisfaction.

A triage provider may also, time permitting, use triage aids to enhance the triage sensitivity. Triage aids will assist the senior health care professional later; after the patient has been referred according to the criteria set in **table 10** above. Triage aids (**compulsory**) should be performed, time permitting, whenever available but is not essential for the triage itself. **Table 11** indicates appropriate interventions that must be commenced by the triage provider as well as triage aids that can be used to enhance the triage process (**optional**).

FYI:

**Triage aids (compulsory)** are **additional tasks** that should be undertaken by the triage provider. These aids provide **additional information** which can be used to enhance the triage diagnosis. The triage provider should only perform triage aids if this will not prolong the waiting time of the patient being triaged or that of other patients waiting to be triaged.

**Triage aids should be performed, time permitting, whenever available**

<b>PROBLEM</b>	<b>COMPULSORY</b>	<b>OPTIONAL</b>
Respiratory rate scores 1 point or more	<ol style="list-style-type: none"> <li>1. Pulse oximetry (saturation)</li> <li>2. Finger prick gluco test if patient is diabetic</li> <li>3. Refer to anteroom and give oxygen</li> </ol>	
Temperature 38.5° or more	<ol style="list-style-type: none"> <li>1. Paracetamol 1g orally stat (document in the notes) (children – discuss with sister or doctor)</li> </ol>	
Temperature 35° or less	<ol style="list-style-type: none"> <li>1. Blankets</li> </ol>	
Altered level of consciousness (AVPU score other than A)	<ol style="list-style-type: none"> <li>1. Refer to anteroom and hand patient over to senior health care professional</li> <li>2. Finger prick gluco test</li> </ol>	
Unable to sit up/ need to lie down	<ol style="list-style-type: none"> <li>1. Refer to anteroom and hand patient over to senior health care professional</li> <li>2. Finger prick gluco test</li> </ol>	
Chest pain	<ol style="list-style-type: none"> <li>1. Immediate ECG and present to senior health care professional</li> </ol>	
Active bleeding	<ol style="list-style-type: none"> <li>1. Apply pressure to site of trauma with a dry dressing and take to anteroom</li> </ol>	
Active seizure / fitting	<ol style="list-style-type: none"> <li>1. Refer to anteroom and hand patient over to senior health care professional</li> <li>2. Finger prick gluco test</li> </ol>	
History of diabetes	<ol style="list-style-type: none"> <li>1. Finger prick gluco test</li> </ol>	
Diabetes and Hyperglycaemia (gluco test 11 or more)	<ol style="list-style-type: none"> <li>1. Urine dipsticks to check for ketones</li> </ol>	
Hypoglycaemia (gluco test 3 or less)	<ol style="list-style-type: none"> <li>1. Refer to anteroom and hand patient over to senior health care professional</li> </ol>	<ol style="list-style-type: none"> <li>2. If the patient is alert, give food or drink orally</li> </ol>
History of bleeding		<ol style="list-style-type: none"> <li>1. Finger prick haemoglobin</li> </ol>
Bleeding PR, PO or from a site of trauma		<ol style="list-style-type: none"> <li>1. Finger prick haemoglobin</li> </ol>
Abdominal pain or backache: male		<ol style="list-style-type: none"> <li>1. Urine dipsticks</li> </ol>
Abdominal pain or backache: female		<ol style="list-style-type: none"> <li>1. Urine dipsticks</li> <li>2. Urine pregnancy test</li> </ol>
PV bleeding		<ol style="list-style-type: none"> <li>1. Urine dipsticks</li> <li>2. Urine pregnancy test</li> <li>3. Finger prick haemoglobin</li> </ol>

**Table 11. Interventions to be carried out at triage**

## **5: SUMMARY**

Triage is an essential first step in the efficient and effective running of any Emergency Unit – whether in the public or private arena. A robust triage tool will help to save lives and reduce morbidity. The Cape Triage Score has been derived by a panel of 20 experts in Emergency Medicine (doctors, nurses and paramedics), and is scientifically proven. It has been shown to improve waiting times and make the EU run more smoothly. However, attention needs to be paid to those patients triaged Green, especially in peak times, and the CTG recommends the use of streaming with a Nurse Practitioner or doctor to see this group.

The CTS has been validated as part of a Masters in Philosophy (MPhil) with 700 public sector patients, a MPhil with 2000 private sector patients, and an audit of 18000 primary care public sector. The children's' versions have been derived and validated as part of a PhD. Feedback following publication in four major journals has also contributed to the process.

However, we accept that the tool may not be perfect and that is why your feedback is so important. In addition, there will be ongoing research aimed at keeping the tool accurate and appropriate. If necessary, second and subsequent editions will follow.

In 2006, there is an intention to form a national triage group to take this process to the next step: a South African Triage Score! There will also be a website developed for updates and information – look out for details.

## 6: CASE SCENARIOS

QUESTIONS										
Case	History	TEWS							Calculated TEWS?	Final triage colour?
		Mobility	RR	HR	BP	Temp	AVPU	Trauma		
1	50 year old woman, stubbed her toe. Limp into the unit (unassisted), shouting loudly about her pain. Subungual haematoma of her left big toe, otherwise normal.		20	98	120/90	36.8				
2	31 year old woman, 24 weeks pregnant, brought into the unit on a wheelchair. PV bleed		22	128	95/65	35.9				
3	16 year old boy, hit by a motor car whilst cycling. Brought in by paramedics immobilised on a stretcher, unconscious (responds to pain only), ventilated by BVM (bag-valve-mask) - no spontaneous respiration.		0	128	100/60	36				
4	25 year old man - motorbike accident. Brought in by stretcher. Minor deformity of his right arm (humerus), overlying skin is intact. Responds to voice. In severe pain		19	125	138/70	36.5				
5	25 year old man hit his left hand with a hammer. Index finger swollen, tender, appears to be dislocated at the PIP joint. Says it is 'quite painful' does not appear distressed.		19	108	130/80	36.8				
6	34 year old asthmatic lady walks in. Alert and speaking in short sentences.		15	140	140/85	38.2				
7	58 year old smoker walks in. Severe chest pain and is sweating.		19	125	90/60	36.2				
8	30 year old lady scratched by a cat. 2 x 10cm abrasions on right forearm. Tearful, complaining loudly about her neighbour's cat and that she urgently needs a tetanus injection and 'maybe		14	98	140/85	36.2				

	stitches'. She is mobile.								
9	45 year old man brought in by his family (walking). Was binge drinking last night. They thought he was just hung over this morning, but he complained of severe abdominal pain. He is also seeing insects crawling all over the ceiling (which the staff can't see). Alert.	17	109	110/60	36.1				
10	18 year old girl after extrication from a shack fire. Soot around her nose, is coughing, and her voice is hoarse. She is mobile, orientated and co-operative.	18	105	140/75	36.9				
11	53 year old man with known peptic ulcer disease walks in complaining of moderate abdominal pain plus bloating. Alert and orientated. The sister notes that he looks 'off colour' and diaphoretic (sweating)	19	127	105/60	36.5				
12	25 year old woman was quad-biking and fell off at her quad. Her right forearm is slightly deformed, but the skin is intact. Her right hand is warm with good pulses and she is moving her fingers well.	18	115	135/90	36.7				
13	A microlite pilot has crash-landed into a field. The microlite was crumpled on top of him for 45 minutes. He is brought into the emergency unit on a stretcher after a 30 minute ambulance trip. He is alert but has a deformity of his left lower leg and moderate neck and chest pain	19	109	130/75	36				
14	70-year old woman is brought in on a stretcher. Partially sedated via intravenous Dormicum and is responding to voice - in third degree heart block and is being transcutaneously paced	21	90	105/65	35.8				

15	62 year old diabetic woman develops left-sided arm weakness and slurred speech. Patient needs assistance to mobilize.	16	95	170/88	36.3				
16	2-week old neonate is brought into the emergency unit. He weighs 2 kg. He is 48 cm tall. His mother says he is short of breath.	65	155	65	36				
17	3 year old girl (93cm height) has had gastroenteritis for 3 days. She is carried in by mum and reacts to voice.	41	140	105	37.5				
18	8 year old boy was riding his bicycle and cycled into a pole. He has a deformity of his right forearm and is in severe pain. He is brought into the unit walking (assisted).	22	125	122	36.9				
19	11 year old girl (height 145 cm) arrives at the emergency unit with right iliac fossa pain of 2 days' duration. She is mobile and is alert.	25	120	115	38.8				
20	6 year old boy (115cm tall) has walked into a brick. There is bruising of his right big toe, but no obvious deformity. He complains of mild pain and is not distressed. He is mobile	21	120	100	37.1				
21	8 year old girl (125cm) arrives at the emergency unit with obvious wheezing. Her mother informs you that she is a known asthmatic and that her inhaler ran out a week ago. She is mobile	22	128	125	38.7				
22	4 year old boy (height 100cm) is extricated from a shack fire. He is crying loudly from pain, as he has a burned right arm. He is also burned around the mouth and nostrils, and is coughing. Total burn area 15%. He is walking.	34	118	128	37.2				

23	7 year old girl (height 118cm) falls off her skateboard and hurts her right hand. There appears to be a deformity (i.e. dislocation) at the right index finger, PIP joint. The skin is intact. She is in a moderate amount of pain. She is mobile	20	121	125	36.8				
24	13 year old boy (height 155cm) has been complaining of a painful right ear for 2 days. His father says that he has also had a high fever at home. He is mobile	14	98	130	38.7				
25	2 year old girl (height 83 cm) sustains a hot-water 'scald' burn from boiling water in a kettle. She is burned on her left thigh, approximately 9% surface area circumferential burn (ie around the thigh). She is in a moderate amount of pain. Her left foot feels cool, her left calf is firmer than the right and she cries out in pain when the left foot is passively moved. Not mobile (being carried - unable to walk	38	140	95	36.5				
26	10 year old boy (135cm tall) has had right iliac fossa pain (moderate degree) for 24 hours. He is mobile and alert	17	116	110	37.8				
27	The parents of a 2 year old boy (84 cm height) come running to the triage nurse with a child who is fitting. He has had intermittent high fever of unknown origin for the past 48 hours. He is placed on the triage bed and a doctor is urgently called. Observations: Mobility - immobile & unresponsive.	21	145	80	39.6				
28	A 5-year old girl (105cm in length) finds her grandmother's blood-pressure tablets and eats half the bottle of pills. She is carried into the unit as she is too drowsy to walk. She responds to voice.	20	41	77	35.9				



29	An anxious mother brings her 3 year old (height 90cm) daughter to the emergency room. She informs the receptionist and the triage sister that this is 'a serious emergency' and that her child must be seen by a doctor 'immediately'. She has had intermittent fever for 4 days and a sore throat. The child is standing next to her mother, crying loudly		26	125	103	38.1				
30	10 year old boy (135cm) has been roller-blading. He fell and hurt his right shoulder, which appears to be dislocated. He walks into the unit and is in severe pain.		35	128	103	36.9				

ANSWERS											
Case	Notes	TEWS							TEWS total	Final triage colour	
		Mobility	RR	HR	BP	Temp	AVPU	Trauma			
1	No obvious sign of toe fracture which would make her a yellow. However, one may code her as yellow due to the severe pain and decide to relieve the subungual haematoma in reasonable time to prevent further discomfort. Overall, patient is 'green' but may also be coded 'yellow' due to pain level plus possible fracture phalanx of toe.	0	1	0	0	0	0	0	1	2	Green
2	PV bleed in pregnancy is 'yellow'. However, this lady has a TEWS of 6 = 'orange'. This ties in well with her vital signs of high RR and HR as well as low BP. She should be triaged 'orange' and seen ASAP	1	2	2	1	0	0	0	0	6	Orange
3	This is a RED patient. TEWS = 10 (ie red). Although he is not intubated, he has no spontaneous ventilation and therefore scores the maximum for RR ie 2 points. He is unconscious, and will have full cardio-respiratory arrest if not managed immediately. He should be placed in the resuscitation area of the emergency room for immediate intubation plus further management. The patient is obviously a 'red' or resus case as he is receiving bag-valve-mask ventilation on arrival; it is still worth doing a TEWS, as this forms a baseline for further obs during emergency room and ward treatment.	2	2	2	1	0	2	1	1	10	Red
4	Colour coding: TEWS = 7 ie red. He has a number of discriminators that would make him orange or yellow but he has already been triaged red. Vitals need doing as baseline despite clear coding of this patient.	2	1	2	0	0	1	1	1	7	Red

									Cape Triage Score	
5	TEWS = 3, i.e. 'yellow'. He is also in a moderate amount of pain (i.e. 'yellow') and has a finger dislocation (i.e. 'yellow'). 'He is therefore a 'yellow' case.	0	1	1	0	0	0	1	3	Yellow
6	Acute shortness of breath' is 'orange' as it is potentially life – threatening. In this case the TEWS is yellow but the 'triage coding' is orange. It is necessary to do the TEWS as it gives a baseline set of observations (peak flow should also be done) which may alter during the treatment course.	0	1	3	0	0	0	0	4	Yellow
7	TEWS of 4 = 'yellow'. However, he has 'chest pain' (orange) and is in 'severe pain' (orange). He is also at high risk for a myocardial infarction (age, smoker, severe pain + sweating, low BP) and therefore needs to be seen urgently. He should definitely be orange i.e. seen urgently (within minutes). He is not 'red' as not a resus – he will become 'red', if not seen urgently. This is a typical medical case where TEWS is too low relative to the patient's condition until a point of physiological instability is reached (common in acute coronary syndromes).	0	1	2	1	0	0	0	4	Orange
8	TEWS = 1 i.e. green. Abrasions are a minor injury. This is a 'green' patient	0	0	0	0	0	0	1	1	Green
9	TEWS of 2 = 'green'. However, he has abdominal pain = 'yellow' (may have pancreatitis, gastritis). He is displaying psychotic phenomena (seeing insects) and is therefore a risk to himself and others (i.e. frank delirium tremens). His psychosis makes him an 'orange'. Overall, this patient should be triaged 'orange'	0	1	1	0	0	0	0	2	Orange

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10	TEWS of 3 = yellow. However, this person has been caught in a fire. She has evidence of inhalational burns. This places her at risk of airway obstruction in the near future. On the discriminator list, burn face / inhalation = 'red'. She should be triaged as 'red'. She may require urgent intubation if her airway is beginning to swell / occlude. If the doctor decides that her airway is not at risk, he can downgrade her triage status after examination.	0	1	1	0	0	0	1	3	Red
11	TEWS = 3, i.e. 'yellow'. 'Abdominal pain' = 'yellow'. 'Moderate pain' = yellow. However, the senior sister has noted that the patient looks extremely ill and she is concerned. The triage colour coding should therefore be upgraded to 'orange' based on the 'senior health care professional's opinion'. In this case the patient may have a bleeding ulcer or a perforation and the triage upgrade is warranted based on clinical scenario and possible underlying pathology.	0	1	2	0	0	0	0	3	Orange
12	TEWS of 4 = 'yellow'. She may have a closed forearm fracture (ie yellow). She does not have a threatened limb (orange). Overall - yellow.	0	1	2	0	0	0	1	4	Yellow
13	TEWS of 5 = 'orange'. High energy transfer injury (orange) and chest pain (orange). Overall - orange.	2	1	1	0	0	0	1	5	Orange

14	NB Although her heart rate is 90, which normally scores 0 on TEWS, she is being artificially paced and therefore earns two points on this category. This also applies to transvenous pacing in the emergency unit / resus. Patients who have permanent pace-makers in situ do not immediately earn 2 points, although they are of a greater concern than patients without pace-makers and should be triaged to a higher level as considered appropriate by the senior health care professional. Triage coding: TEWS 7 = 'red'. Although not intubated, this is clearly a resus case. She has a potential airway problem (decreased level of consciousness). Her heart is unstable – ie without pacing she would have a low blood pressure / possible lethal arrhythmia. She must be treated in resus immediately, e.g. with transvenous pacing if available, and cardiology referral.	2	2	2	0	0	1	0	7	Red
15	TEWS = 2. i.e. 'green'. However, new-onset of focal neurology makes this patient 'orange'. She is probably having a CVA. 'Time is brain' – we know that aggressive management of stroke patients improves their outcome. This requires high-speed response from dispatch to EMS to Emergency Unit staff, radiology + neurologist. She is at risk of airway occlusion, aspiration, etc so she should be marked urgent. Overall, she has a TEWS of 2 but has new-onset focal neurology so should be marked as 'orange'.	1	1	0	0	0	0	0	2	Orange
16	TEWS n/a – height <50cm + neonate. Neonates are considered 'red' for initial triage; they may be re-triaged to a lower level after initial examination									Red
17	She falls into the infant TEWS chart. TEWS of 5 = orange. She has a 'reduced level of consciousness' (ie 'orange'). She is an urgent case.	0	2	2	0	0	1	0	5	Orange

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18	TEWS of 4 = yellow. This child also has a closed fracture of the forearm (deformity without skin disruption). This also makes him a 'yellow' case. He may be upgraded to orange on the basis of severe pain. Overall - 'yellow'.	1	1	1	0	0	0	1	4	Yellow
19	TEWS of 4 = yellow. 'Abdominal pain' is yellow on the discriminator list. She has a possible appendicitis. Overall - 'yellow'.	0	1	1	0	2	0	0	4	Yellow
20	TEWS of 2 = 'green'. There is no obvious fracture or any other reason to 'up-triage' this child. Overall - 'green'	0	0	1	0	0	0	1	2	Green
21	TEWS of 4 = yellow. However, she is acutely short of breath. This makes her an 'orange' case. Overall - orange.	0	1	1	0	2	0	0	4	Orange
22	TEWS of 4 = 'yellow'. Burn >10% body area = 'orange'. Facial burn + coughing following entrapment in a smoky environment makes this an inhalational burn = 'red' with potential airway compromise. This risk is increased in a child due the anatomy of the airway. He may need to be intubated early before airway swelling (oedema) makes this difficult; at the very least he must be urgently seen and admitted to a high care unit. This patient must be triaged 'red'	0	2	1	0	0	0	1	4	Red
23	TEWS of 2 = 'green'. However, on the discriminator list she has a dislocation of a finger joint and is also in a moderate amount of pain; both of these place her in a 'yellow' triage category. Overall - 'yellow'.	0	0	1	0	0	0	1	2	Yellow
24	TEWS of 2 = 'green'. Use adult chart (older than 12 years, taller than 150cm). The discriminator list does not have a specific discriminator for this problem (probable otitis media). Overall - 'green'	0	0	0	0	2	0	0	2	Green

25	TEWS of 5 = 'orange'. 9% burn = 'yellow'. This girl has a circumferential burn causing a tourniquet - type effect resulting in limb ischaemia. There is decreased perfusion to the left calf. This is therefore a triage category 'orange'. Overall triage - 'orange'.	2	0	2	0	0	0	1	5	Orange
26	TEWS of 1 = 'green'. On the discriminator list 'abdominal pain' is yellow; this child has a possible appendicitis. Overall - 'yellow'	0	0	1	0	0	0	0	1	Yellow
27	TEWS of 11 is 'red'. On the discriminator list a child who is fitting is 'red'. Doing observations in this case should not delay treatment e.g. calling the doctor, finding valium, reducing the temperature. Overall coding 'red'	2	2	2	0	2	3	0	11	Red
28	TEWS of 8 = 'red'. On the discriminator list 'overdose/poisoning' is 'orange'; but this patient has already been triaged red due to the TEWS. Overall triage colour = 'red'	2	0	3	2	0	1	0	8	Red
29	TEWS of 0 = 'green'. There are no discriminators to 'up-triage' this child or any other medical reason to be seen immediately. Overall - 'green'	0	0	0	0	0	0	0	0	Green
30	TEWS of 4 = 'yellow'. However, he has a dislocated shoulder and is in severe pain - both of these discriminators place him in an 'orange' category. Overall triage = 'orange'	0	2	1	0	0	0	1	4	Orange

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