



National Emergency Medicine Programme

# Irish Children's Triage System

2nd Edition January 2021

## Rannóg Éigeandála Emergency Department



Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive



Office of the  
Nursing & Midwifery  
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Tús Áite do  
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Patient Safety 1 First



## FOREWORD to second edition

The National Emergency Medicine Programme presents this 2<sup>nd</sup> edition of the Irish Children's Triage System (ICTS) for the assessment and prioritisation of clinical urgency of paediatric patients presenting to Emergency Departments (EDs) and Urgent Care Centre (UCC) in Ireland. Feedback on the experience of the last 4 years since its initial introduction strongly suggests that ICTS achieves its aim of supporting safer, more effective, timely ED care and reflects the importance of child and family experiences of emergency care.

The triage of children in EDs / UCCs is an established standard of care internationally. ICTS acknowledges the different issues that arise with emergency presentations of children and incorporates additional triage parameters to reflect age-related physiological differences, children's presenting signs and symptoms, significant paediatric co-morbidities and common Paediatric Emergency Medicine diagnoses.

The development of ICTS was prompted by the triage experiences of front-line ED nurses and clinicians caring for children and advanced by the Emergency Nursing Interest Group (ENIG) of the National Emergency Medicine Programme as a safety and quality improvement initiative. The development and testing of ICTS was under the guidance of a Steering Group composed of stakeholders from within Emergency Medicine and senior clinicians across a number of hospitals. It has undergone extensive stakeholder consultation and the National Emergency Medicine Programme and Office for Nursing and Midwifery Services Director are therefore pleased to continue to recommend ICTS be adopted as the national standard of triage for children in all EDs / UCCs in Ireland that see paediatric patients.

Since its introduction, interest has been expressed in using ICTS for deciding clinical urgency of children presenting acutely to areas outside of ED, e.g. to Paediatric Assessment Units. Whilst the tool was developed specifically for use in ED environments, feedback from training staff for its use other areas suggests that the addition of an initial brief training module in the general application of the principles of triage is important.

Finally, this update has been developed during the recent unprecedented period in healthcare provision as a result of the COVID 19 pandemic. One of the changes arising from this is the issues with face to face group teaching. This will mean that future training in ICTS is likely to have a much larger virtual/online component than previously.



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## FOREWORD to first edition


The National Emergency Medicine Programme presents the Irish Children's Triage System (ICTS) for the prioritisation and assessment of paediatric patients presenting to Emergency Departments (EDs) in Ireland. The system supports safer, more effective, timely ED care and reflects the importance of child and family experiences of emergency care. ICTS makes a very significant contribution to the suite of clinical tools developed by the National Emergency Medicine Programme to drive improvement in the safety, quality and value of emergency care in Ireland.

The triage of children in EDs is an established standard of care in international and national practice. However the triage of children can be difficult compared to adults and additional triage parameters are recommended to reflect age-related physiological differences, children's presenting signs and symptoms, significant paediatric co-morbidities and common Paediatric Emergency Medicine diagnoses.

The development of ICTS was prompted by the triage experiences of front-line ED nurses and doctors caring for children and advanced by the Emergency Nursing Interest Group (ENIG) of the National Emergency Medicine Programme as a safety and quality improvement initiative. The development and testing of ICTS has been conducted under the guidance of a Steering Group composed of stakeholders from within Emergency Medicine and senior clinicians across a number of hospitals. ICTS has undergone extensive stakeholder consultation and the National Emergency Medicine Programme and Office for Nursing and Midwifery Services Director are therefore pleased to endorse the recommendations outlined in this document and recommend that ICTS be adopted as the national standard of triage for children and should be adopted in all EDs in Ireland that see paediatric patients. Implementation of the ICTS will contribute significantly to paediatric patient care in our EDs and will promote safety, quality of care, improved access and patient experience in emergency care in Ireland.



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## Irish Children’s Triage System (ICTS)

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<b>Summary</b>	This document describes the prioritisation and assessment of paediatric patients (up to the eve of 16th birthday) presenting to Emergency Departments (EDs) and Urgent Care Centres (UCC) in Ireland.
<b>Contact</b>	emp@rcsi.ie
<b>Applies to</b>	Applies to all Emergency Departments in Ireland with paediatric attendances
<b>Audience</b>	All nursing, medical, clinical and administrative staff involved in the care of children who present to Emergency Departments in Ireland
<b>Author</b>	Irish Children’s Triage System was developed under the guidance of ICTS National Steering Group and approved by the National Emergency Medicine Programme Working Group and the Emergency Nursing Interest Group.
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ICTS cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient’s overall care and wellbeing resides with the multidisciplinary clinical team.



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# 1. PURPOSE

Triage is a risk assessment tool and is vital for patient safety when demand exceeds capacity. Triage has become an essential part of care given in Emergency Departments (EDs) worldwide and is the primary method of identifying and prioritising acuity in children. This document describes the on-going development of Irish Children's Triage System (ICTS), a child-specific triage tool that is used for the assessment and prioritisation of children (up to eve of 16<sup>th</sup> birthday) presenting to all Emergency Departments (ED) in Ireland.

As a quality improvement initiative, the National Emergency Medicine Programme (EMP), through its Emergency Nursing Interest Group (ENIG) convened an ICTS project subgroup in 2011 comprising of senior nurses from seven EDs / UCCs (both children's only and mixed EDs) and specialists in Paediatric Emergency Medicine. This group collaboratively produced the original national ICTS. The work of the project subgroup was overseen by a National Steering Group of key stakeholders and experts in the area of paediatric emergency care.

ICTS was initially successfully piloted and evaluated in six EDs throughout the country in 2013 and since 2016 has been successfully introduced into all EDs that care for children in Ireland. The changes to the second edition of this document are small in number and have incorporated feedback and consideration from Emergency Nurse Interest Group colleagues.

## 1.1 Objectives of the development of the original ICTS (2011)

- To develop a specific triage tool to clinically assess children attending EDs that facilitates the prompt recognition of acuity ill or injured children
- To provide an evidence-based approach to the triage of children that supports clinical decision making with regard to the symptoms and clinical management of the patient
- To develop a tool tailored to include clinical elements such as physiological vital signs, pain assessment, temperature and other special guidelines specific to the needs of children
- To provide a national standard for children's triage which ensures that children receive the same standard and quality of care regardless of where in the country they present for treatment.

## 1.2 Approach

When developing the ICTS tool (2011-2016), the sub-group agreed to use a similar format to that of the Manchester Triage System - MTS (Mackway-Jones *et al*, 2014) as it was considered appropriate to build on a system that was already familiar to staff rather than introduce a completely new system that would require substantial re-education and training. Using this framework (MTS is used for patients aged 16 years or older in all EDs in Ireland) has facilitated mixed EDs with both child and adult attendances to easily navigate both systems. Therefore colour-coding and recommended maximum times to Clinician review for different triage categories are comparable in both ICTS and MTS. It is believed that this approach is appropriate and supports the practice in mixed EDs / UCCs and therefore continues to be used in this updated version.

## 2. INTRODUCTION

The Irish Children's Triage System (ICTS) is a child-specific triage tool that is followed for the prioritisation of children up to 16 years of age presenting to Emergency Departments (ED) in Ireland and it continues to be endorsed by the National Emergency Medicine Programme in Ireland.

The World Health Organisation has identified that deaths of children often occur within the first 24 hours of hospitalisation (WHO, 2016). Many of these deaths could be prevented by early identification and intervention for these critically ill children. WHO (2016) acknowledges that the identification of these critically ill patients may possibly be facilitated by an effective triage system. They state that the response within the Emergency Department (ED) must be targeted to ensure the sickest patients get an immediate response.

International healthcare systems in the United Kingdom (Manchester Triage System, 2014), Canada (Canadian Triage and Acuity Scale, 2008, Canadian Triage and Acuity Scale Paediatric Guidelines, Warren *et al*, 2008) and Australia and New Zealand (Australasian Triage Scale, 2016) have designed national triage systems to focus on patient needs based on acuity of presentation with the objective of improving patient safety and enhancing satisfaction. Although the United States of America has a variety of triage tools (3-tier to 5-tier systems), the most commonly used triage system in the USA is the 5-tier Emergency Severity Index (Gilboy *et al* 2012). The Canadian Triage system is the only triage system identified above that has a designated child-specific triage system (PaedCTAS, Warren *et al*, 2008).

An overcrowded ED / UCC can lead to a delay in treatment for critically ill patients, increasing the rate of morbidity and mortality. Therefore, an accurate triage system is an essential tool for prioritising seriously ill children based on their need for or likely benefit from immediate medical treatment. Accurate triage reduces the incidence of adverse events in the ED and is an indicator of a good quality emergency service.

Children are not little adults. The triage of children is particularly challenging compared to adults because of their different response to physiological and psychosocial stressors. Children have short attention span, become frightened easily, have a limited ability to comprehend and communicate. Of all patients presenting to the ED, infants (<1 year) are the most difficult for the triage nurse to assess as they lack verbal cues and often have subtle signs of serious illness.

It is recognised that in mixed EDs, the acuity of paediatric patients is often inaccurately compared with that of the adult population (Cameron *et al* 2014, Ebrahimi *et al* 2015, Kanokwan & Uthen 2017). Manchester Triage System is the triage system most commonly used in Europe and is the triage tool used for the prioritisation of adults presenting to EDs in Ireland. Manchester Triage System has increased the amount of child specific flow charts since its first edition in 1997. In the 3<sup>rd</sup> version of the Manchester Triage System (2014), 10 of the 53 flow charts are child specific, 3 are adult based only and therefore 40 of the flow charts are generic to adults and children.

### **3. GENERAL DISCRIMINATORS**

General Discriminators are discriminators that apply to all of the flow charts and therefore are not Flow Chart specific. When staff train in the use of ICTS they are advised to pay specific attention to the generic discriminators (Figure 3.1) as they can be applied to any presentation.

The general discriminators are based on the systematic approach to airway, breathing, circulation (including haemorrhage), disability, exposure (including rashes and temperature) as well as pain score and acuity of onset of illness/injury. Chapter 5 provides further guidance on the many assessments that are child based and specific to the ICTS.

#### **General Discriminators (Figure 3.1)**

The following is a list of common discriminators that appear in every flow chart in ICTS and the recommended minimum triage category each specific discriminator should receive in the absence of a specific discriminator identifying a higher acuity level.

Definition	Triage categories	General discriminators
<p><b>Colour</b></p> <p>Triage category</p> <p>Meaning of triage category</p> <p>Recommended time to be seen by Treating clinician</p>	<p><b>Red</b></p> <p>1</p> <p>Immediate</p> <p>Immediate (on-going assessment)</p>	<p>Airway compromise</p> <p>Inadequate breathing</p> <p>Exsanguinating haemorrhage</p> <p>Currently seizing</p> <p>Abnormal age-related vital signs (Refer vital signs reference grids)</p> <p>GCS <math>\leq</math> 12</p> <p>Oxygen saturations <math>\leq</math> 90%</p>
<p><b>Colour</b></p> <p>Triage category</p> <p>Meaning of triage category</p> <p>Recommended time to be seen by Treating Clinician / reassessment</p>	<p><b>Orange</b></p> <p>2</p> <p>Very urgent</p> <p><math>\leq</math> 10 minutes</p>	<p>Severe pain (pain score 7-10)</p> <p>Uncontrollable major haemorrhage</p> <p>GCS 13 or 14</p> <p>Abnormal age-related vital signs (Refer vital signs reference grids)</p> <p>Signs of compensated shock</p> <p>Oxygen saturations <math>\leq</math> 92%</p> <p>Central capillary refill time (CRT) <math>&gt;</math> 2 seconds</p>
<p><b>Colour</b></p> <p>Triage category</p> <p>Meaning of triage category</p> <p>Ideal time targets</p>	<p><b>Yellow</b></p> <p>3</p> <p>Urgent</p> <p><math>\leq</math> 60 minutes</p>	<p>Moderate pain (pain score 4-6)</p> <p>Uncontrollable minor haemorrhage</p> <p>Abnormal age-related vital signs (Refer vital signs reference grids)</p> <p>History of unconsciousness</p>
<p><b>Colour</b></p> <p>Triage category</p> <p>Meaning of triage category</p> <p>Ideal time targets</p>	<p><b>Green</b></p> <p>4</p> <p>Standard</p> <p><math>\leq</math> 120 minutes</p>	<p>Mild pain (Pain score 1-3)</p> <p>Problem <math>&lt;</math>48 hours</p>
<p><b>Colour</b></p> <p>Triage category</p> <p>Meaning of triage category</p> <p>Ideal time targets</p>	<p><b>Blue</b></p> <p>5</p> <p>Non urgent</p> <p><math>\leq</math> 240 minutes</p>	<p>Problem <math>&gt;</math> 48 hours</p>

Figure 3.1

## 4. SPECIAL CASES

The 'Special Cases' guideline (Figure 4.1) allows children with significant co-morbidities and young infants to receive a higher acuity category than their presenting complaint and / or clinical findings might mandate. Children with significant co-morbidities are already compensating due to their underlying illness and these children can become critically ill with an otherwise mild / moderate illness. It has been identified that some triage systems under-triage a significant number of children who require admission / ICU admission (Zachariasse *et al.* 2016). Risk factors for under-triaged children have previously been identified as children < 3 months, presenting problem, child with significant co morbidity, a referral by a physician or emergency services and presentations during the evening or night shift (Zachariasse *et al.* 2016). ICTS has identified some of these potential risks in the 'special cases guidelines' to ensure that these patients are not under-triaged or at risk of rapid deterioration in the ED.

It is acknowledged in the literature that of all patients presenting to the ED, infants (<1 year) are the most difficult for the triage nurse to assess. They lack verbal cues and have subtle signs of serious illness. Sometimes signs can be as subtle as reduced feeding or sleeping more than usual. Therefore in ICTS a child <3 months receives a triage category 3 as the lowest acuity triage category and on- going monitoring of the baby's condition post triage is vital in ensuring that the infant remains safe whilst in the ED (Mackway-Jones *et al.* 2014).

### Children who should never be triaged less than Category

**2**

- Children with history of metabolic disorder
- Children with Sickle Cell Disease
- Children with a tracheostomy and breathing difficulties
- Children with ventriculo-peritoneal shunt problems
- Children who have undergone Kasai procedure

### Children who should never be triaged less than Category

**3**

- Co-existing illness with significant morbidity:
  - ❖ Children with airway problems
  - ❖ Children with significant respiratory history
  - ❖ Children with cardiac history
  - ❖ Children with significant renal history
  - ❖ Children with bleeding disorders
  - ❖ Oncology patients currently receiving oncology treatment
- Babies <3/12
- Immuno-compromised children

## 5. VITAL SIGN REFERENCE GRIDS AND OTHER ASSESSMENT TOOLS

### Pulse and respirations

It has been well established that abnormalities in vital signs at triage are strong predictors of adverse outcomes including ICU admission and in-hospital mortality. The Irish Children's Triage System (ICTS) used a consensus approach to modify the Canadian Triage and Acuity Scale Paediatric Guidelines (PaedCTAS, Warren *et al.* 2008) to adapt it to an Irish environment and population. If the Canadian vital signs parameters had remained unchanged, 61% of children would potentially receive a triage category 2 and 19.8% to receive a category 1 (Lee *et al.* 2017). The implication of using the PaedCTAS Vital Signs Reference Grid without adjusting the acuity levels to the Irish population would mean that potentially over 80% of children presenting would require clinician review within 10 minutes of triage. This over-triage of children would potentially overwhelm the capacity of the system by mandating prompt review for such a large proportion of children leaving other ill patients waiting for prolonged periods to be seen.

The presence of an abnormally raised pulse in triage is recognised as a challenge in the assessment of children in ED since tachycardia may be due to anxiety, fever or pain rather than clinical deterioration of the child (Fernandez *et al.* 2017, Lee *et al.* 2017). It has been suggested that initial raised vital signs of children at EDs may be abnormal because of anxiety and irritability resulting in unrealistic triage levels (Takahashi *et al.* 2016). It is agreed that pulse rates exceeding 2 standard deviations (Table 5.1) should be triaged as an urgent triage category.

Some EDs internationally have allowed the experienced nurse to down-triage the patient based on abnormal vital signs. It is acknowledged that subjective assessment of the child may be influenced by extreme tiredness, work overload or lack of sleep and this subjective assessment can lead to incorrect decisions. This creates a risk for the child who could be demonstrating signs of serious illness and is never recommended in ICTS. Post triage monitoring is essential for trending the child's observations and identifying deterioration or improvement of the child's condition.

Furthermore, some other triage tools give very little attention to bradycardia or bradypnoea. It has been suggested that this oversight has led to under-triage in the paediatric population. The Vital Signs Reference Grid (Tables 5.1 & 5.2) gives guidance on triage categories and the need for early intervention based on unacceptable high or low pulse and respiratory rates.

## Vital Signs Reference Grid

### Heart Rate Values

Age	≤ - 2 SD	- 1 SD	Normal	+ 1 SD	+ 2 SD	> + 2 SD
0 – 3 months	< 65	65 – 89	90 – 179	180 – 204	205 – 230	> 230
4 – 6 months	< 63	63 – 89	90 – 159	160 – 179	180 – 210	> 210
7 -12 months	< 60	60 – 79	80 – 139	140 – 159	160 – 180	> 180
1 – 3 years	< 58	58 – 74	75 – 129	130 – 144	145 – 165	> 165
4 – 6 years	< 55	55 – 69	70 – 109	110 – 124	125 – 140	> 140
> 7 years	< 45	45 – 59	60 – 89	90 – 104	105 – 120	> 120

SD: standard deviation

Table 5.1

### Respiratory Rate Values

Age	≤ - 2 SD	- 1 SD	Normal	+ 1 SD	+ 2 SD	> + 2 SD
0 – 3 months	< 20	20 – 30	31 – 60	61 – 70	71 – 80	> 80
4 – 6 months	< 20	20 – 30	31 – 60	61 – 70	71 – 80	> 80
7 – 12 months	< 17	17 – 25	26 – 45	46 – 55	56 – 60	> 60
1 – 3 years	< 15	15 – 20	21 – 30	31 – 35	36 – 40	> 40
4 – 6 years	< 12	12 – 16	17 – 24	25 – 28	29 – 32	> 32
> 7 years	< 10	10 – 13	14 – 20	21 – 24	25 – 26	> 26

SD: standard deviation

Table 5.2

Vital Signs Reference Grids (adapted from Warren *et al.* 2008)

## Blood pressure

Blood pressure measurement is not always a critical factor in assigning a triage category to children and it has been suggested that its measurement should be left to the discretion of the triage nurse. Blood pressure measurement is difficult to achieve in children due to discomfort and the inability of many children to stay immobile whilst the cuff is inflating/deflating and therefore giving an incorrect measurement. However, ICTS (2021) recommend a blood pressure with certain presenting complaints (e.g. renal and cardiac patients, neurological assessment, history of hypertension, signs of shock). ICTS recommends a blood pressure and central capillary refill time (CRT) checked on a patient with sustained tachycardia. Hypotension rarely presents as a single discriminator and is often considered as a late sign of deterioration.



## Classification of significant hypertension and hypotension by age group

Age group	Significant Hypertension (mm Hg)	Severe Hypertension / Hypotension (mm Hg)
Neonate (< 7 days)	Systolic BP $\geq$ 96	Systolic BP $\geq$ 106 Systolic BP < 70
Neonate (8 – 30 days)	Systolic BP $\geq$ 104	Systolic BP $\geq$ 110 Systolic BP < 70
Infant (< 2 years)	Systolic BP $\geq$ 112 Diastolic BP $\geq$ 74	Systolic BP $\geq$ 118 Diastolic BP $\geq$ 82 Systolic BP < 75
Children (2 – 5 years)	Systolic BP $\geq$ 116 Diastolic BP $\geq$ 76	Systolic BP $\geq$ 124 Diastolic BP $\geq$ 84 Systolic BP < 80
Children (6 – 9 years)	Systolic BP $\geq$ 122 Diastolic BP $\geq$ 78	Systolic BP $\geq$ 130 Diastolic BP $\geq$ 86 Systolic BP < 90
Children (10 – 12 years)	Systolic BP $\geq$ 126 Diastolic BP $\geq$ 82	Systolic BP $\geq$ 134 Diastolic BP $\geq$ 90 Systolic BP < 90
Adolescents (13 – 15 years)	Systolic BP $\geq$ 136 Diastolic BP $\geq$ 86	Systolic BP $\geq$ 144 Diastolic BP $\geq$ 92 Systolic BP < 100

**Table 5.3** Abnormal age related blood pressure ranges

## Temperature

Temperature  $\geq$  38°C in children < 3 months is worrying in this high-risk group for serious illness and therefore the lowest triage category that an infant less than 3 months receives is a triage category 3. On-going post triage monitoring is vital for identifying early deterioration and therefore early appropriate intervention in this patient group. In the younger age especially, the nurse is asked to be vigilant for the child that is hypothermic as this is potentially an indicator of sepsis. Therefore whilst pyrexia of  $\geq$ 40°C gives a child a triage category 2, a temperature  $\leq$  35.5°C (with a reliable method of temperature recording) also gives the child a triage category 2.

## Pain

Pain should be assessed using pain assessment tools recommended by local policy. The use of pain scores is more complex than just identifying a pain assessment tool therefore nurses should use the pain assessment tools supported by local education modules.

Suggestions for suitable pain assessment for children:

**1. r-FLACC (Figure 5.1) for the child up to 6 years of age and children with cognitive impairment**

Categories	0	1	2
<b>Face</b>	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested. <b>Sad, appears worried</b>	Frequent to constant quivering chin, clenched jaw, <b>distressed looking face expression of fright/panic</b>
<b>Legs</b>	Normal position or relaxed; <b>usual tone and motion to limbs</b>	neasy, restless tense, <b>Uoccasional tremors</b>	Kicking, or legs drawn up, <b>marked increase in spasticity, constant tremors, jerking</b>
<b>Activity</b>	Lying quietly, normal position, moves easily, <b>regular rhythmic respirations</b>	Squirming, shifting back and forth, <b>tense, tense/guarded movements, mildly agitated, shallow/splinting respirations, intermittent sighs</b>	Arched, rigid or jerking, severe <b>agitation, head banging, shivering, breath holding, gasping, severe splinting</b>
<b>Cry</b>	No cry (awake or asleep)	Moans or whimpers, occasional complaint, <b>occasional verbal outbursts, constant grunting</b>	Crying steadily, screams or sobs, frequent complaints, <b>repeated outbursts, constant grunting</b>
<b>Consolability</b>	Content, relaxed	Reassured by occasional touching, hugging, or being talked to; distractible	Difficult to console or comfort, <b>pushing caregiver away, resisting care or comfort measures</b>

Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten

**References:**  
Merkel, S. *et al* The FLACC: A behavioural Scale for Scoring Postoperative Pain in Young Children, *Pediatric Nurse* 23(3): 293-297, 1997. Copyright: Jannetti Co. University of Michigan Medical Centre  
Malviya, S. Vopel-Lewis, T. Burke, Merkel, S. Tait, A.R. (2006). **The revised FLACC observation Pain Tool: Improved Reliability and Validity for Pain Assessment in Children with Cognitive Impairment.** (*Pediatric Anaesthesia* 16: 258-265).

Figure 5.1 Revised FLACC observation pain tool

**2. Wong and Baker FACES Pain rating scale (Figure 5.2) or the Pain Ruler (Figure 5.3) for the older child**

**Wong and Baker FACES® Pain rating scale**

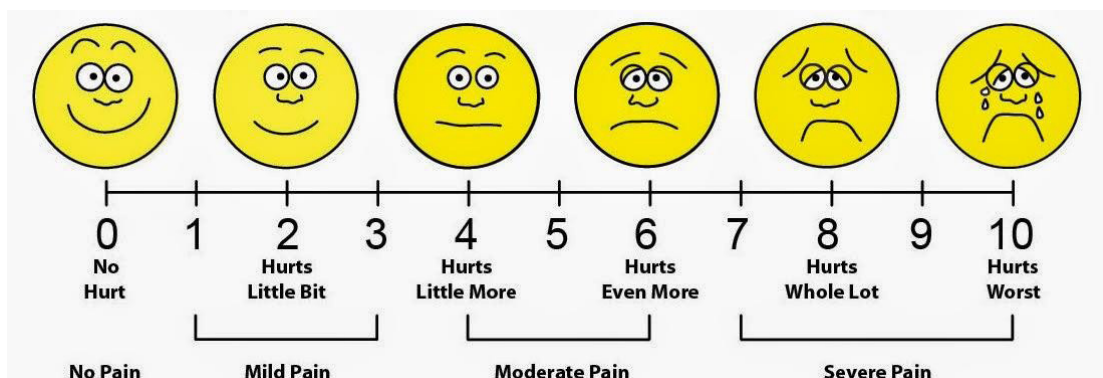
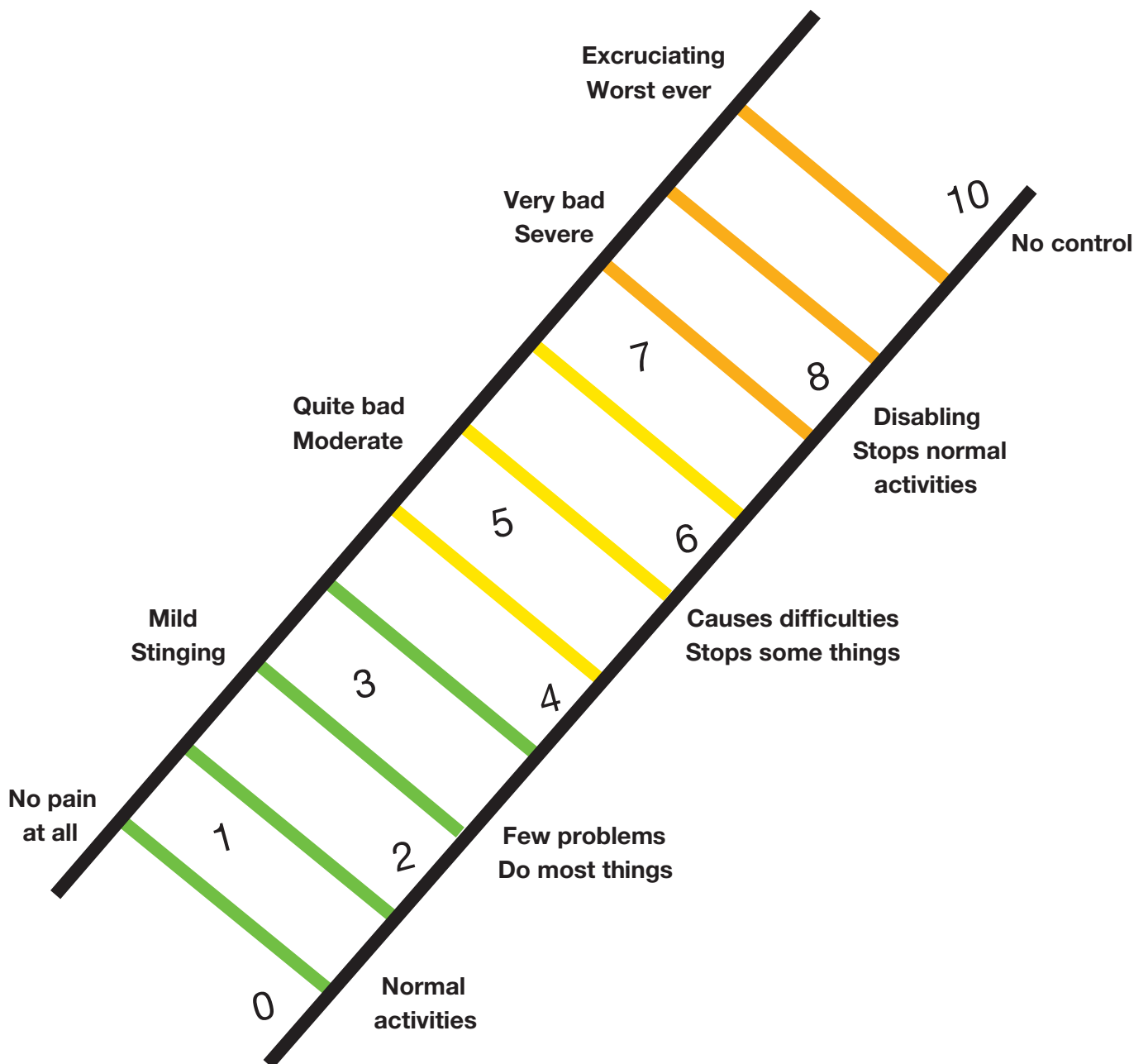


Figure 5.2 Wong and Baker FACES® Pain rating scale (Courtesy of Whaley & Wong 1983)



**Figure 5.3** Pain Ruler (Manchester Triage System, 2014)

In EDs / UCCs, there is also an objective assessment that is carried out based on the child's demeanor, activity, physical appearance and the assessment of the injury / illness that may be at odds with the child's assessment of their pain. This is why it is essential to have the parent assist with the pain assessment in triage. If there is a discrepancy with the child's assessment of pain and the nurse's assessment, both should be recorded and the nurse assessment should indicate objectivity in their assessment. All pain should be managed with pain score appropriate pain relief (pharmacological and non- pharmacological). However, Brudvik *et al.* (2016) suggest that assessment of pain between clinical staff and children is poor with ED physicians significantly underestimating the child's pain level.

## 6. FLOWCHARTS

The Irish Children’s Triage System consists of 24 child-specific flowcharts. It is essential that when using the flow charts, the chart chosen is based on the presenting problem. If the flow chart matching the presenting illness / injury is chosen, there are often prompts within the flow chart as to the specific questions to be asked, suggested observations to be carried out or tests/monitoring to be commenced.

The Unwell infant (less than 1 year) and Unwell child (over 1 year) (including pyrexia) Flow Charts are recommended for use only when the presenting problem is not addressed in a different Flow Chart.

### Flow Charts

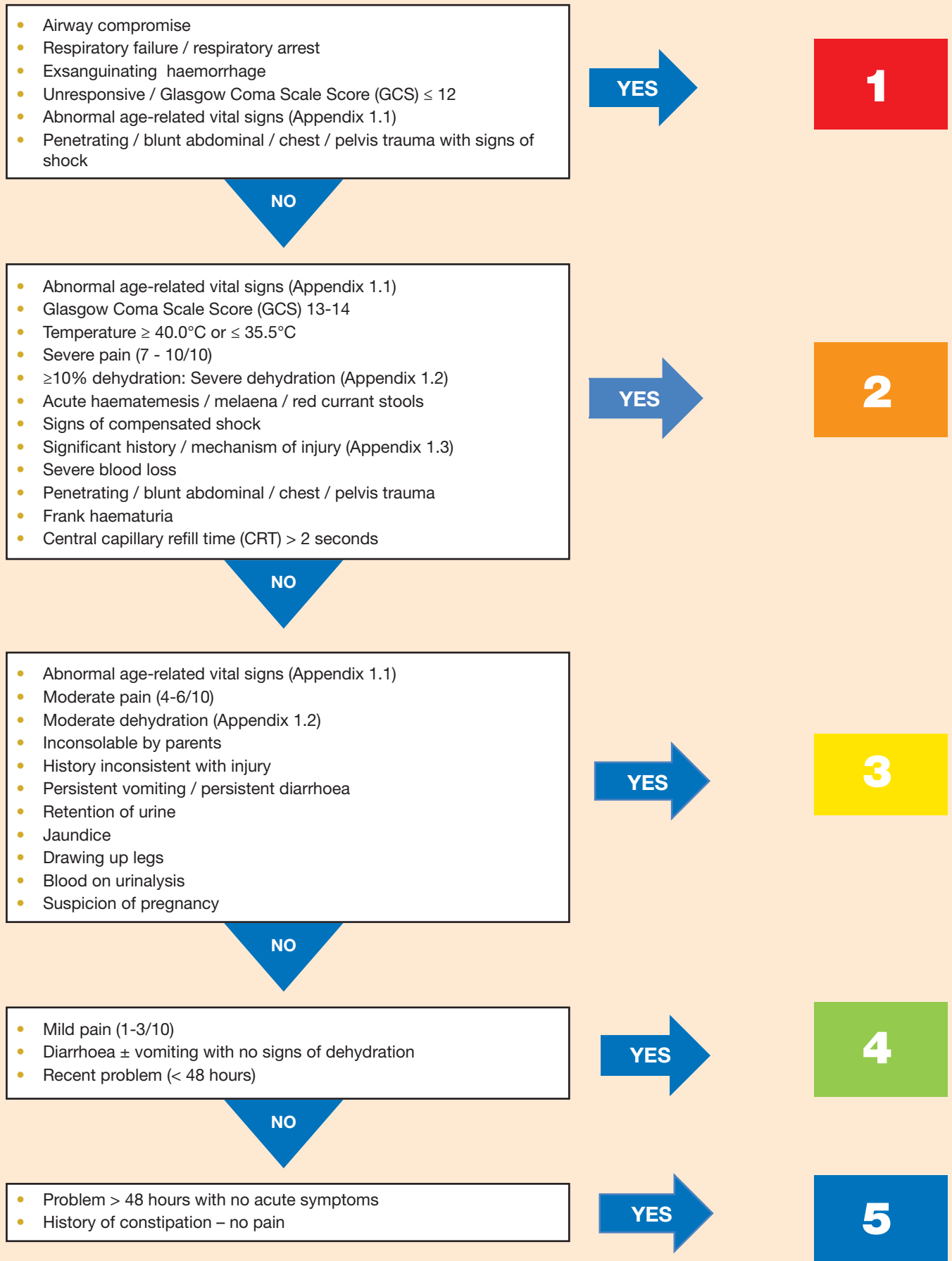
• Abdominal Pain /Isolated Abdominal Trauma.....	19
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### Important Notes:

- **An electronic version of ICTS is currently available in some EDs / UCCs in Ireland.**
- **In EDs / UCCs where an electronic ICTS is in use the reference material contained in Appendix 1 should be made available in paper format.**
- **Local training and education in the use of ICTS including the electronic version rests with an EDs Clinical Operational Group (COG).**
- **No alterations should be made to any material (hard copy or electronic) without the explicit consent of the National Emergency Medicine Programme**

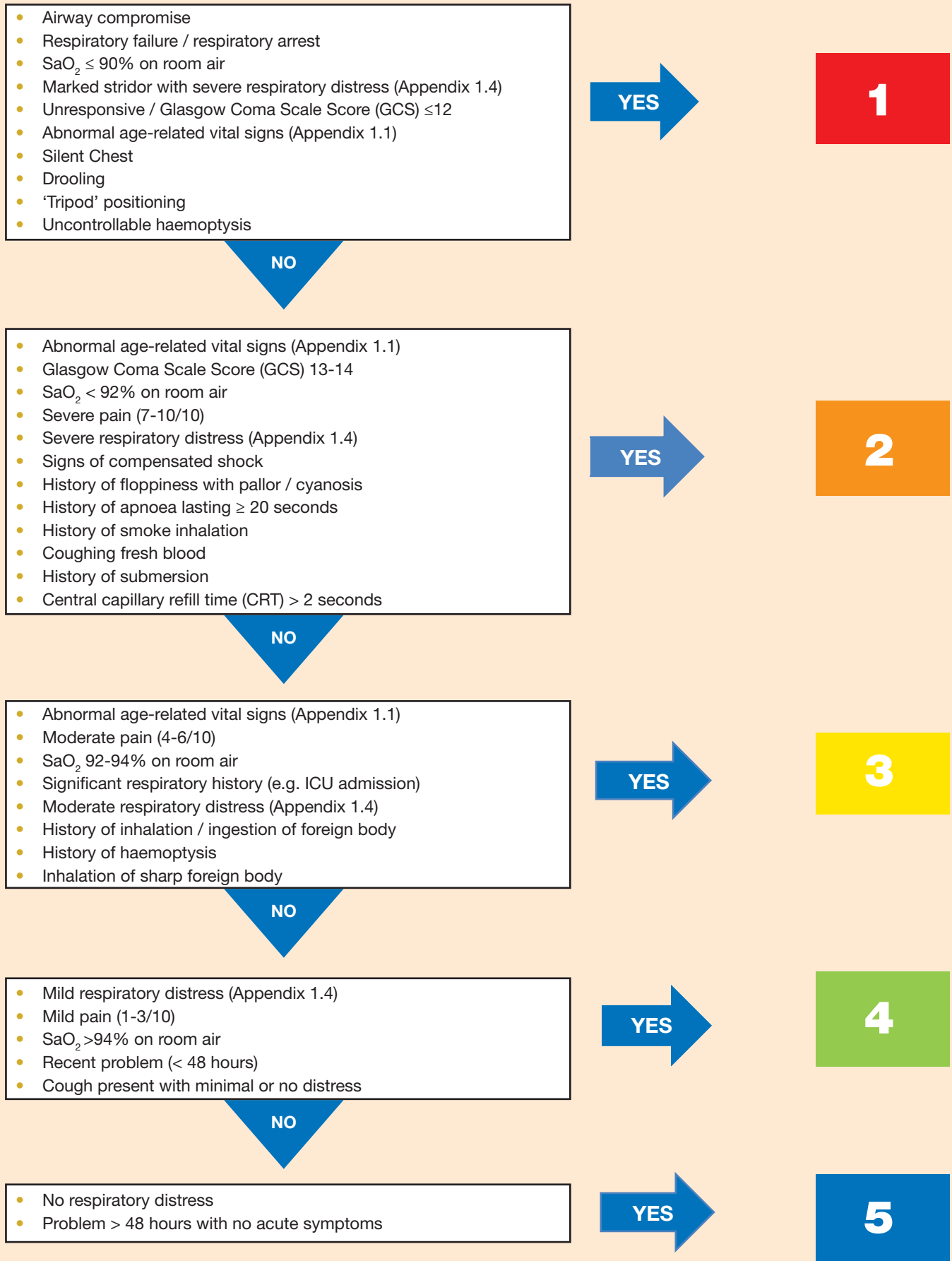
# ABDOMINAL PAIN / ISOLATED ABDOMINAL TRAUMA

See Appendices for decision making aids and reference charts



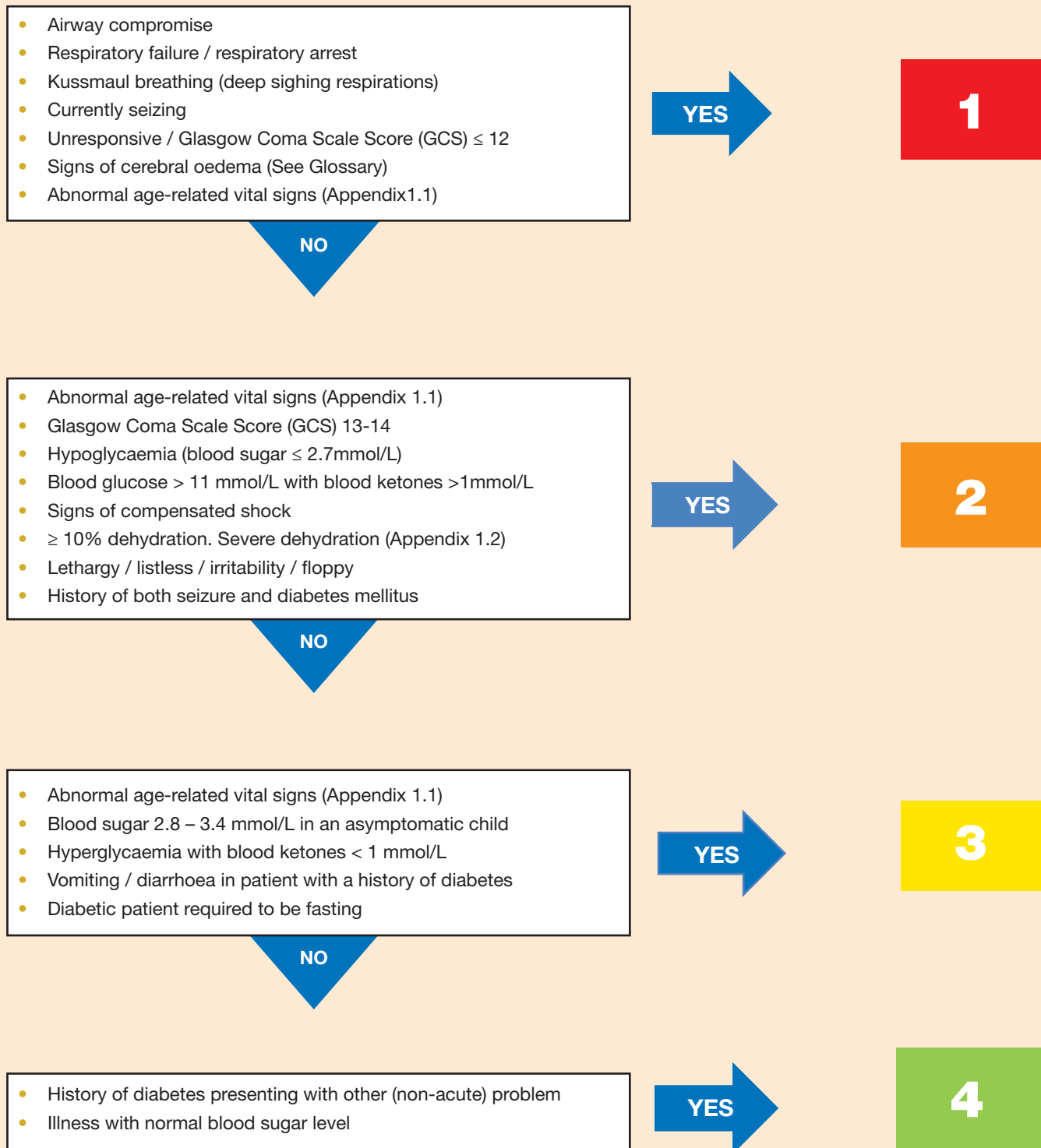
# AIRWAY / BREATHING DIFFICULTY

See Appendices for decision making aids and reference charts



## ALTERED BLOOD GLUCOSE (including patients with Diabetes Mellitus)

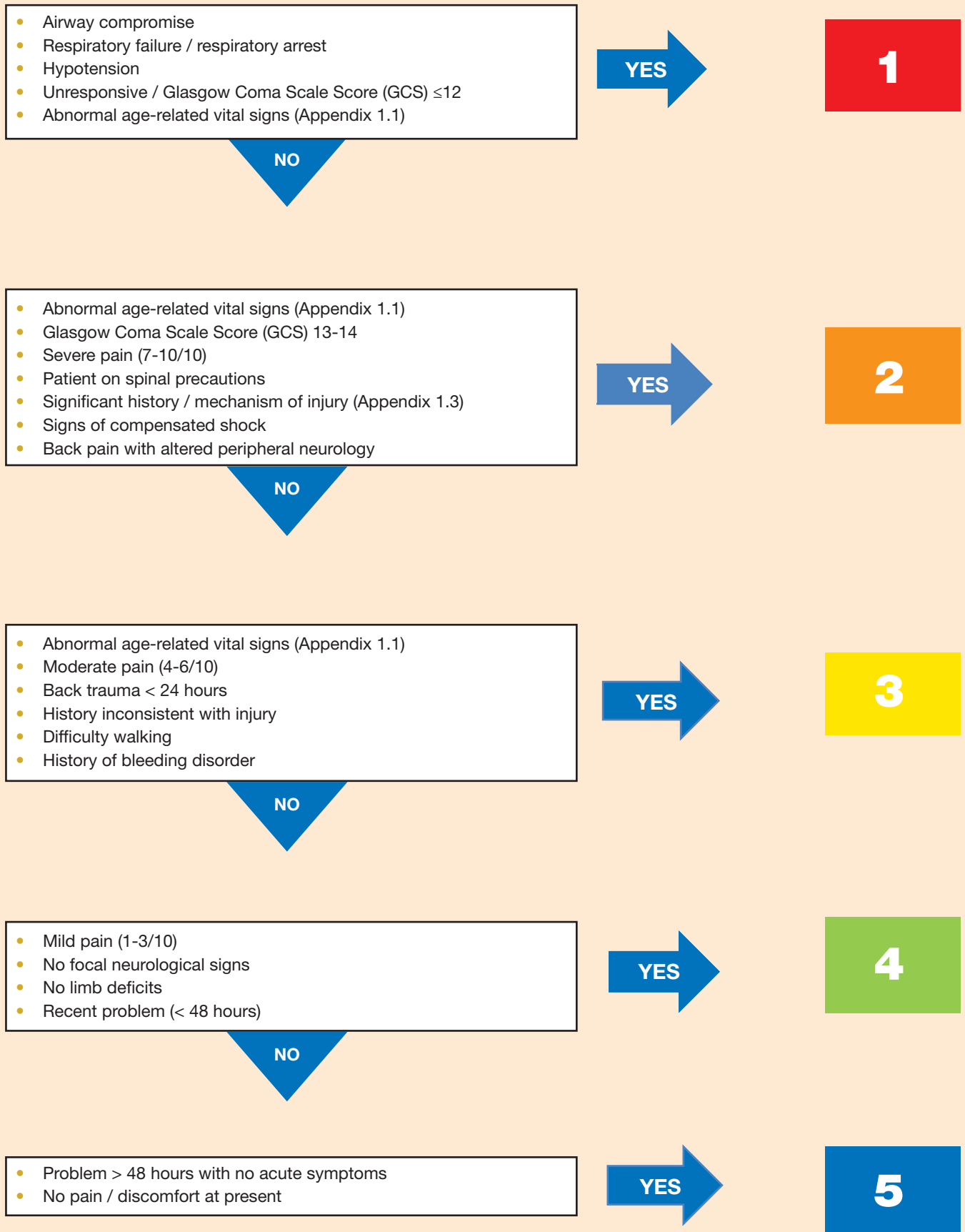
See Appendices for decision making aids and reference charts



**These patients should never be triaged less than Category 4**

# BACK PAIN / ISOLATED NECK AND / OR BACK INJURY

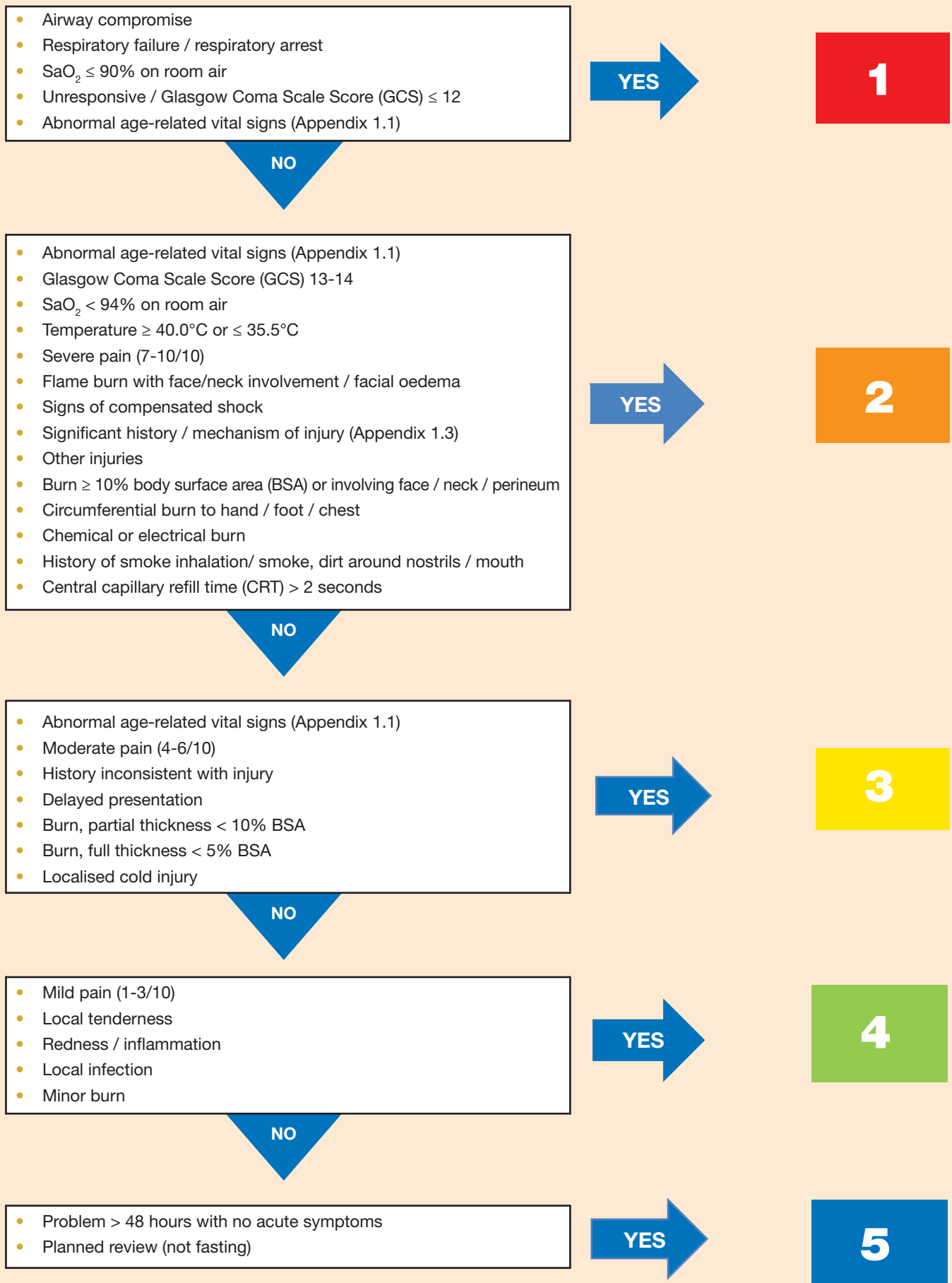
See Appendices for decision making aids and reference charts





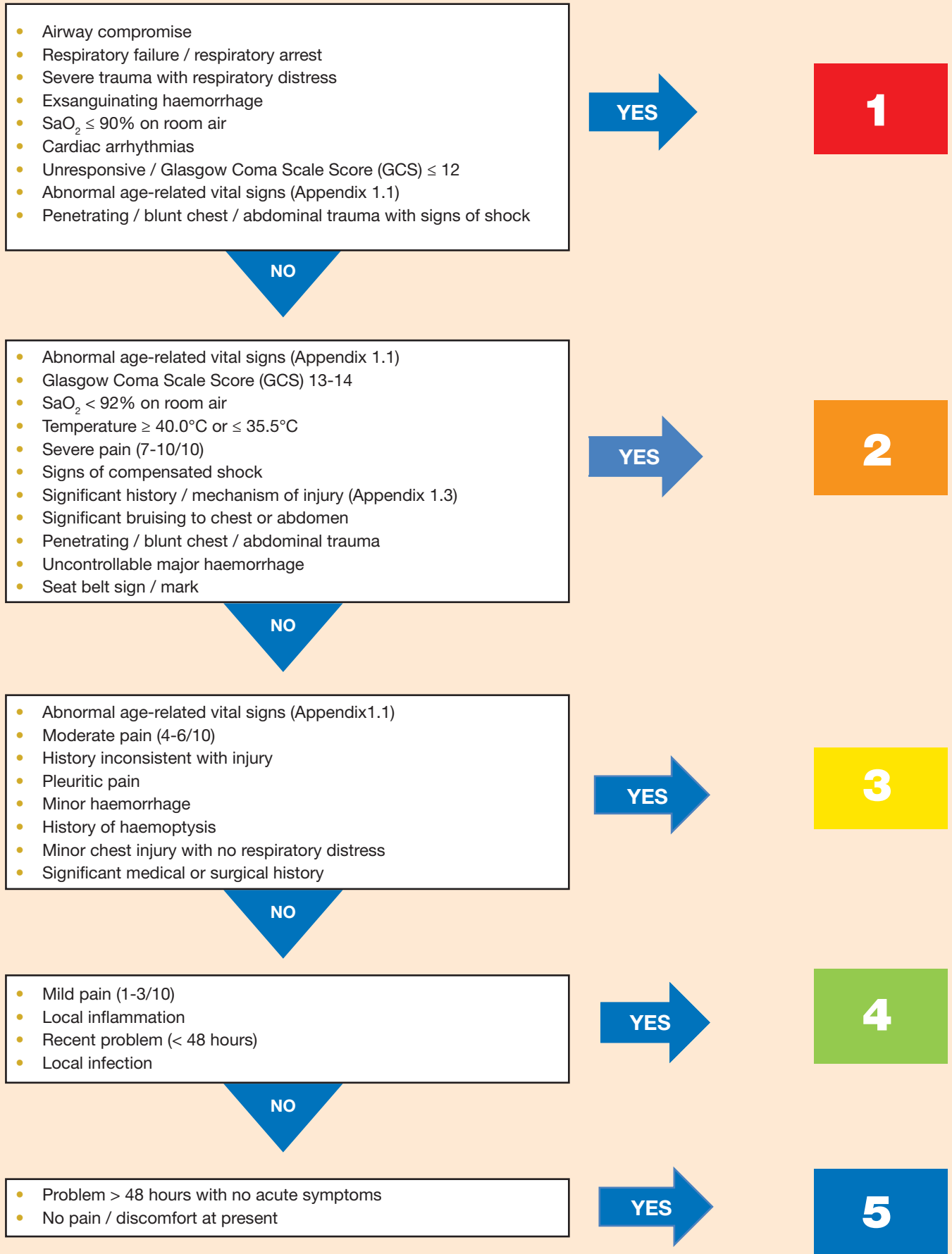
# BURNS / SCALDS

See Appendices for decision making aids and reference charts



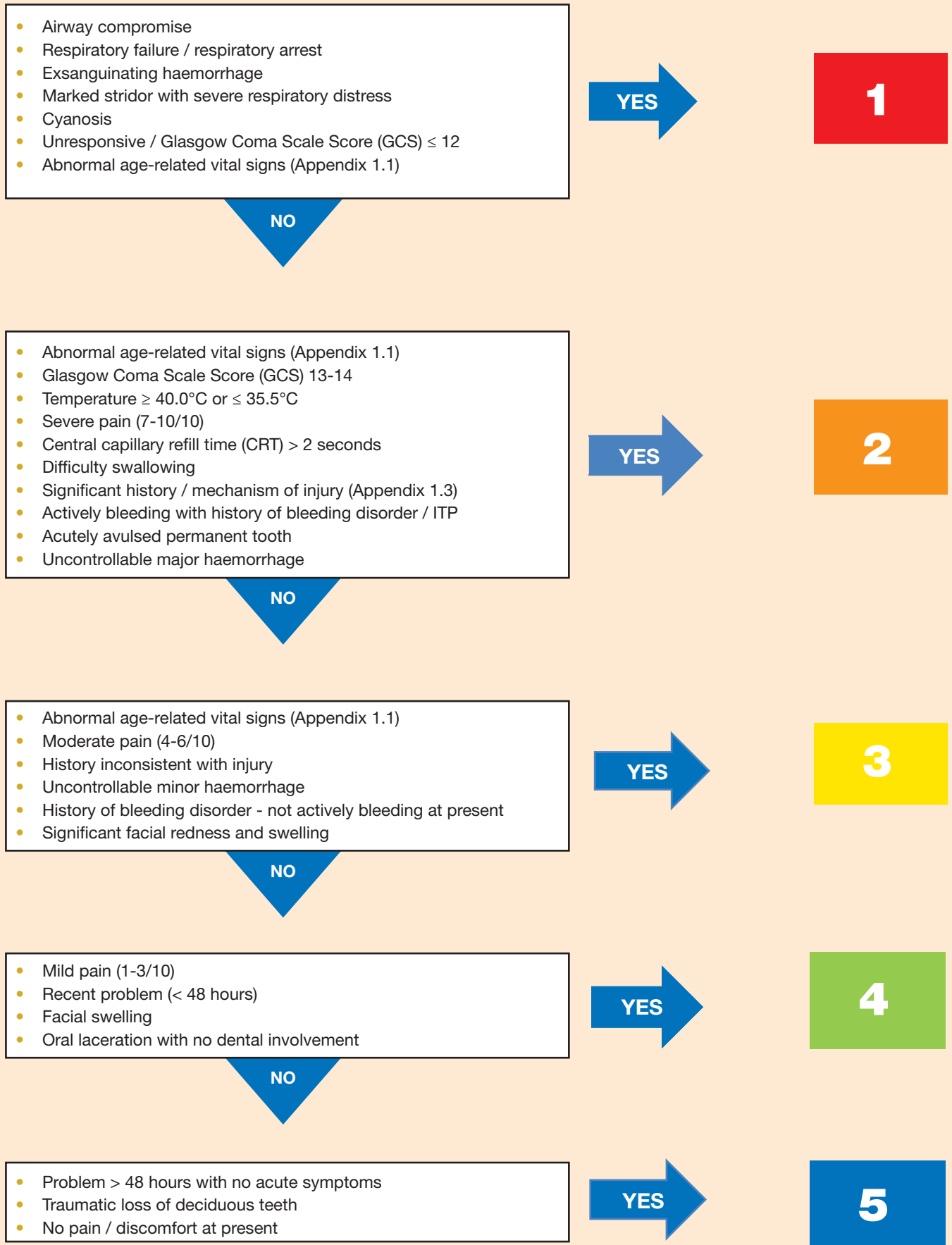
# CHEST PAIN / ISOLATED CHEST INJURY

See Appendices for decision making aids and reference charts



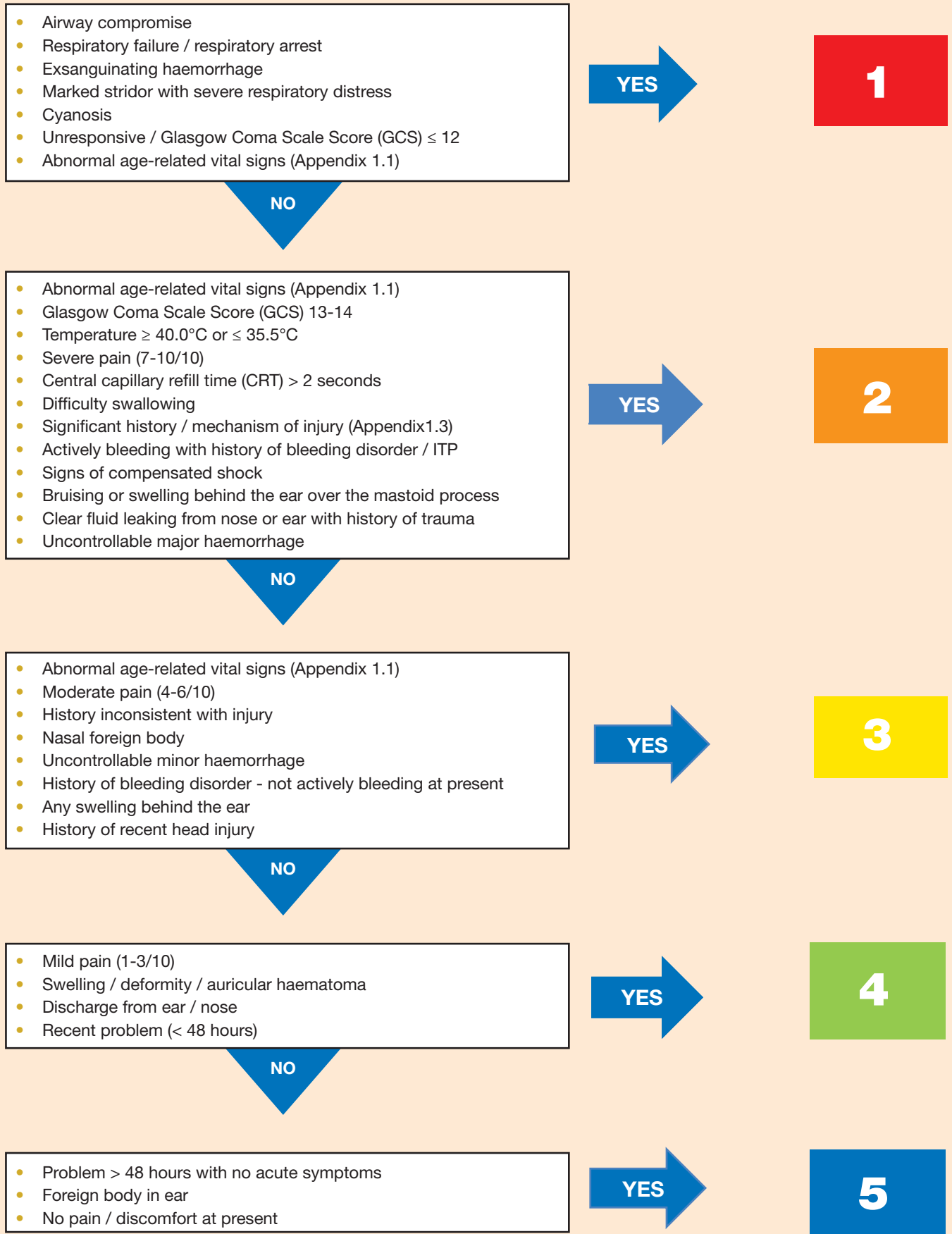
# DENTAL PROBLEM

See Appendices for decision making aids and reference charts



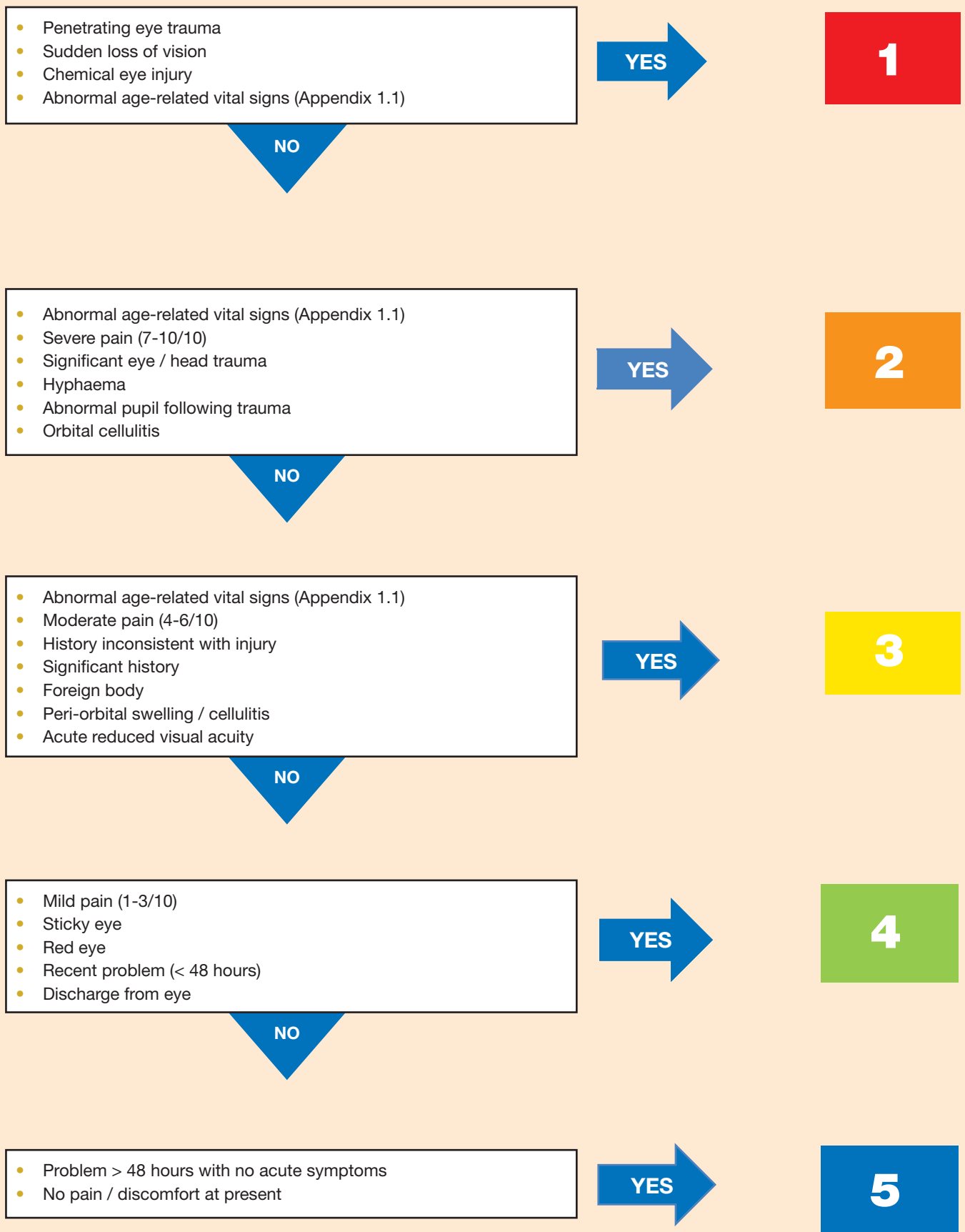
# EAR / NASAL PROBLEM

See Appendices for decision making aids and reference charts



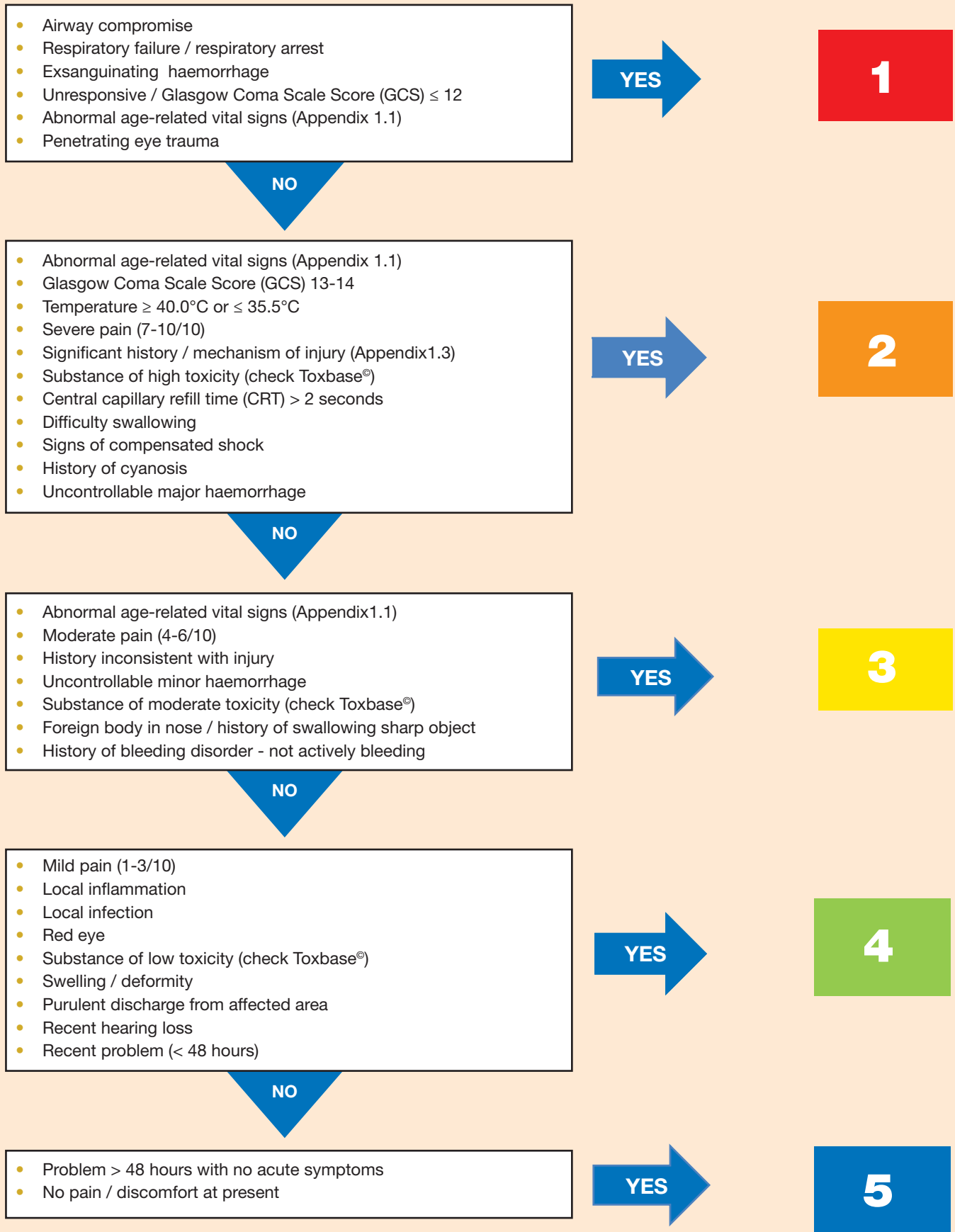
# EYE INJURY PROBLEM

See Appendices for decision making aids and reference charts



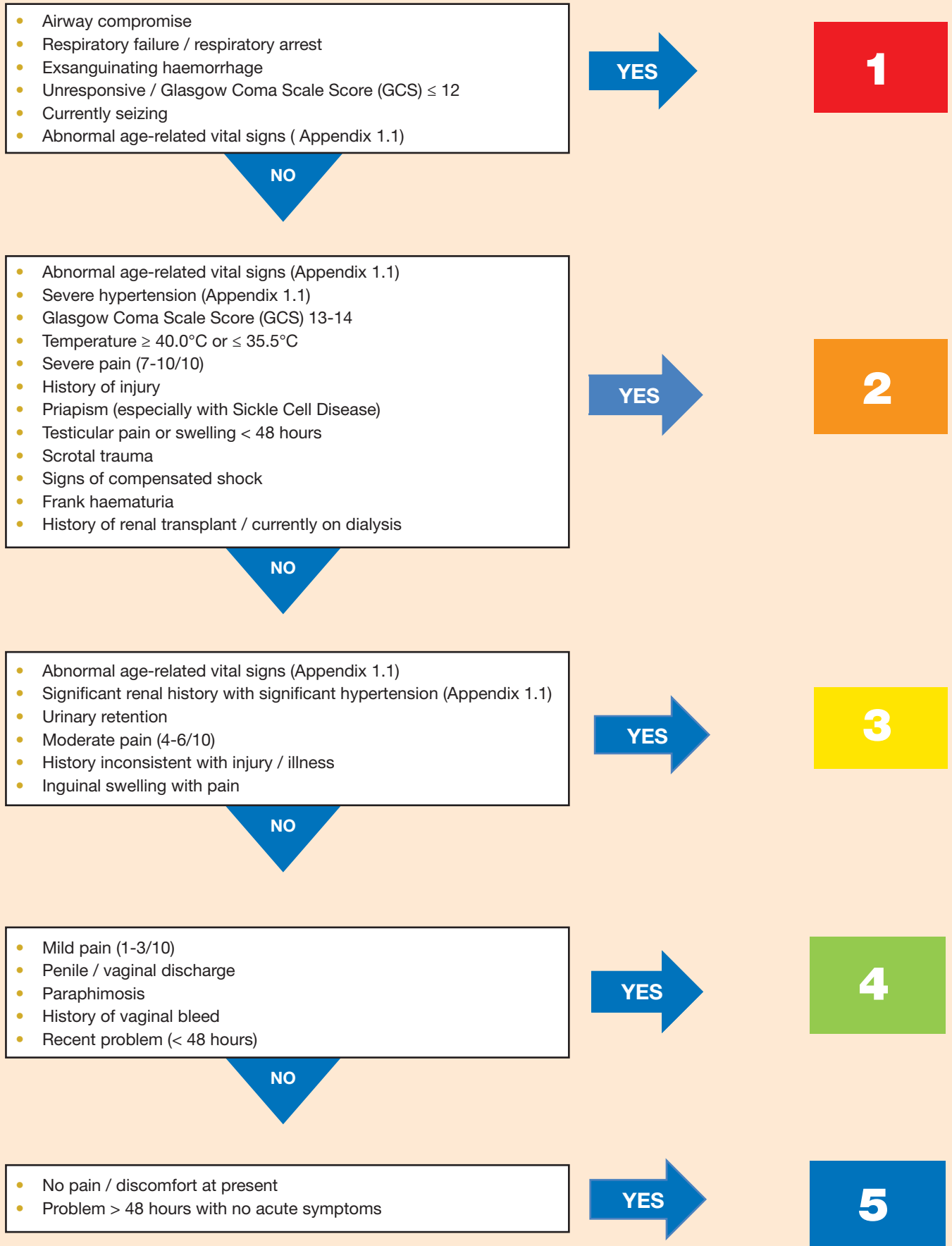
# FOREIGN BODY – NOT INHALED (for inhaled foreign body use Airway / Breathing flowchart)

See Appendices for decision making aids and reference charts



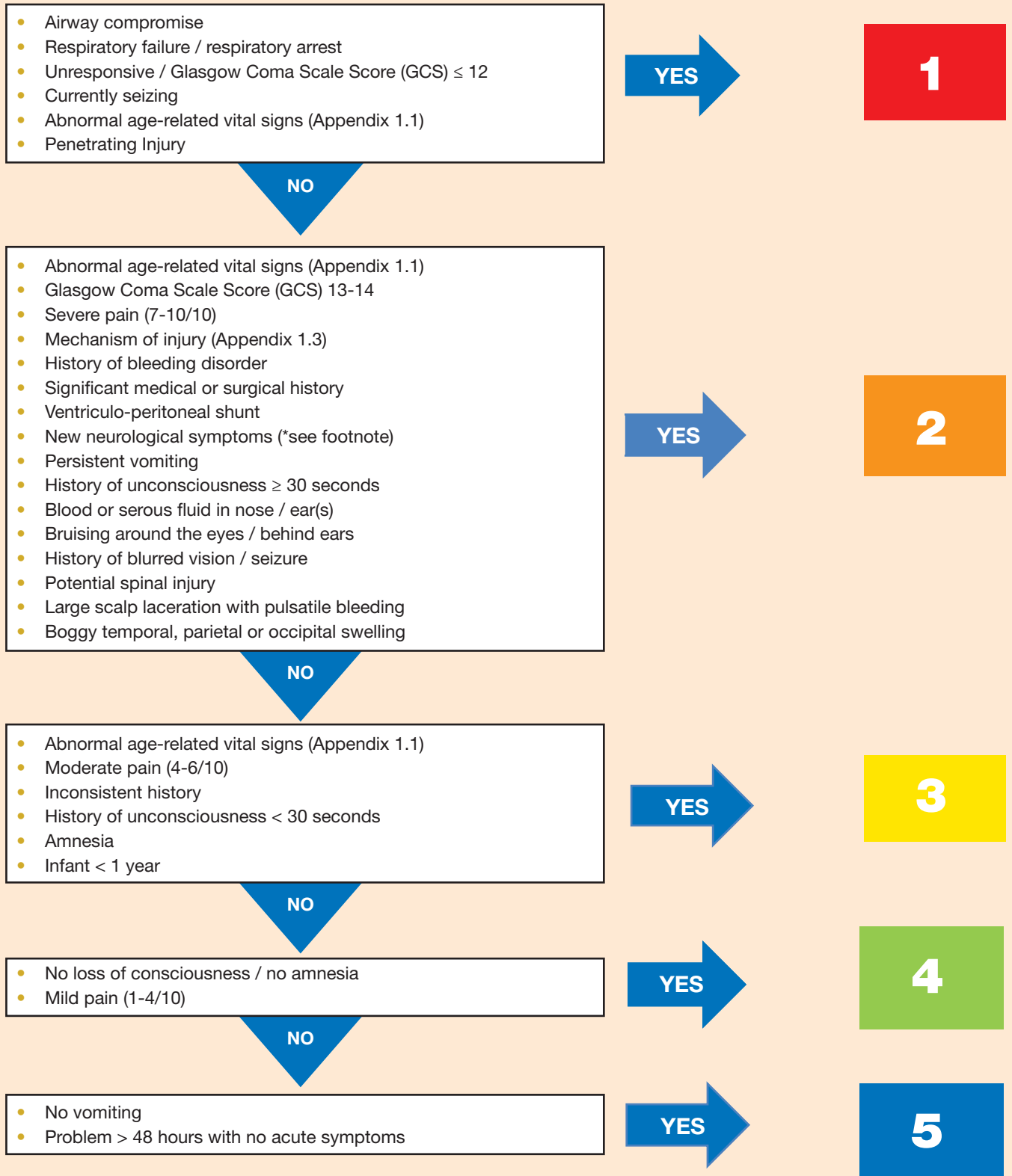
# GENITOURINARY PROBLEM

See Appendices for decision making aids and reference charts



# HEAD INJURY / HEADACHE / VP SHUNT

See Appendices for decision making aids and reference charts

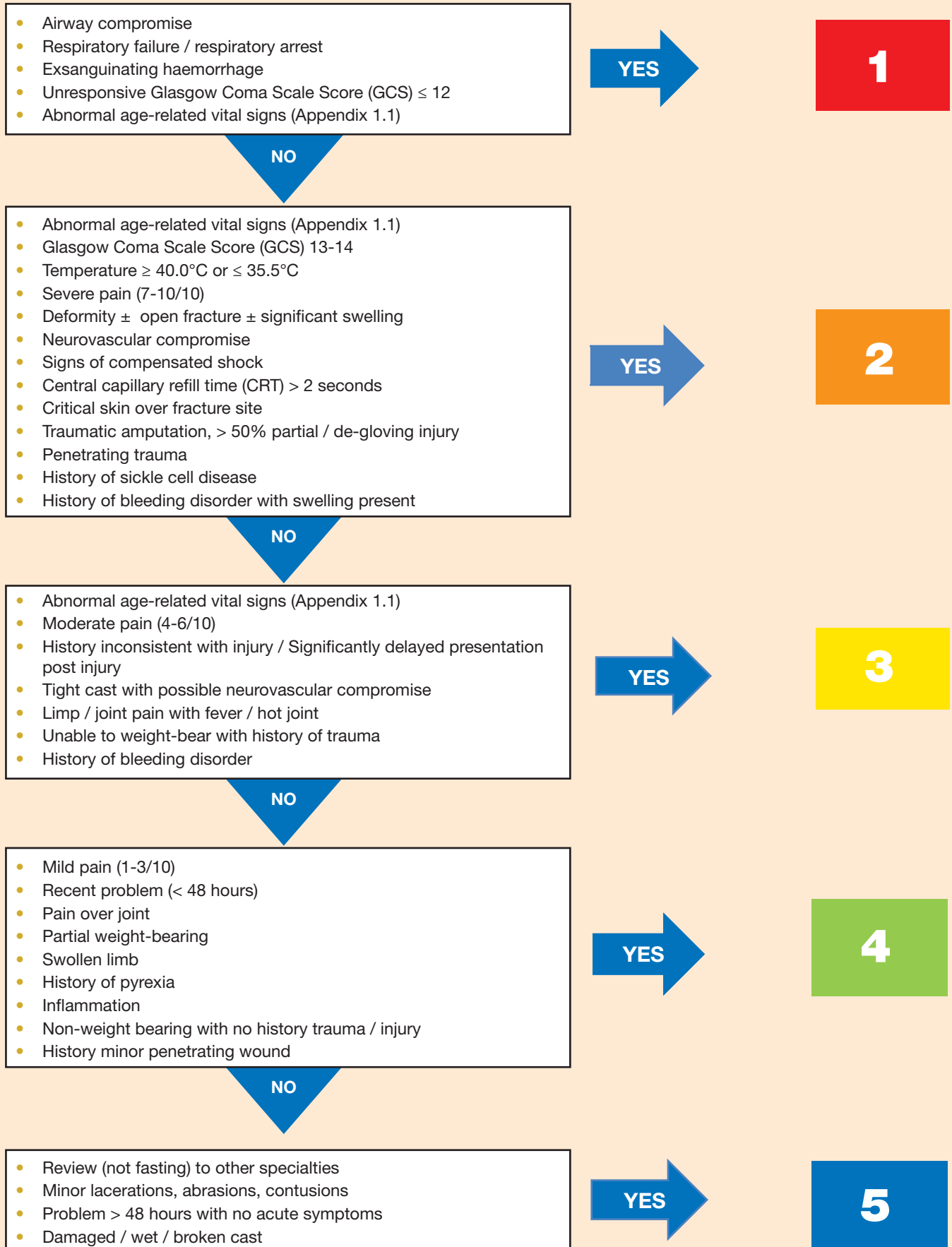


**\* New neurological symptoms = sudden onset of confusion, weakness / irritability or drowsiness. Symptoms may also include altered level of consciousness, loss of sensation, limb weakness or alterations in bladder or bowel function.**



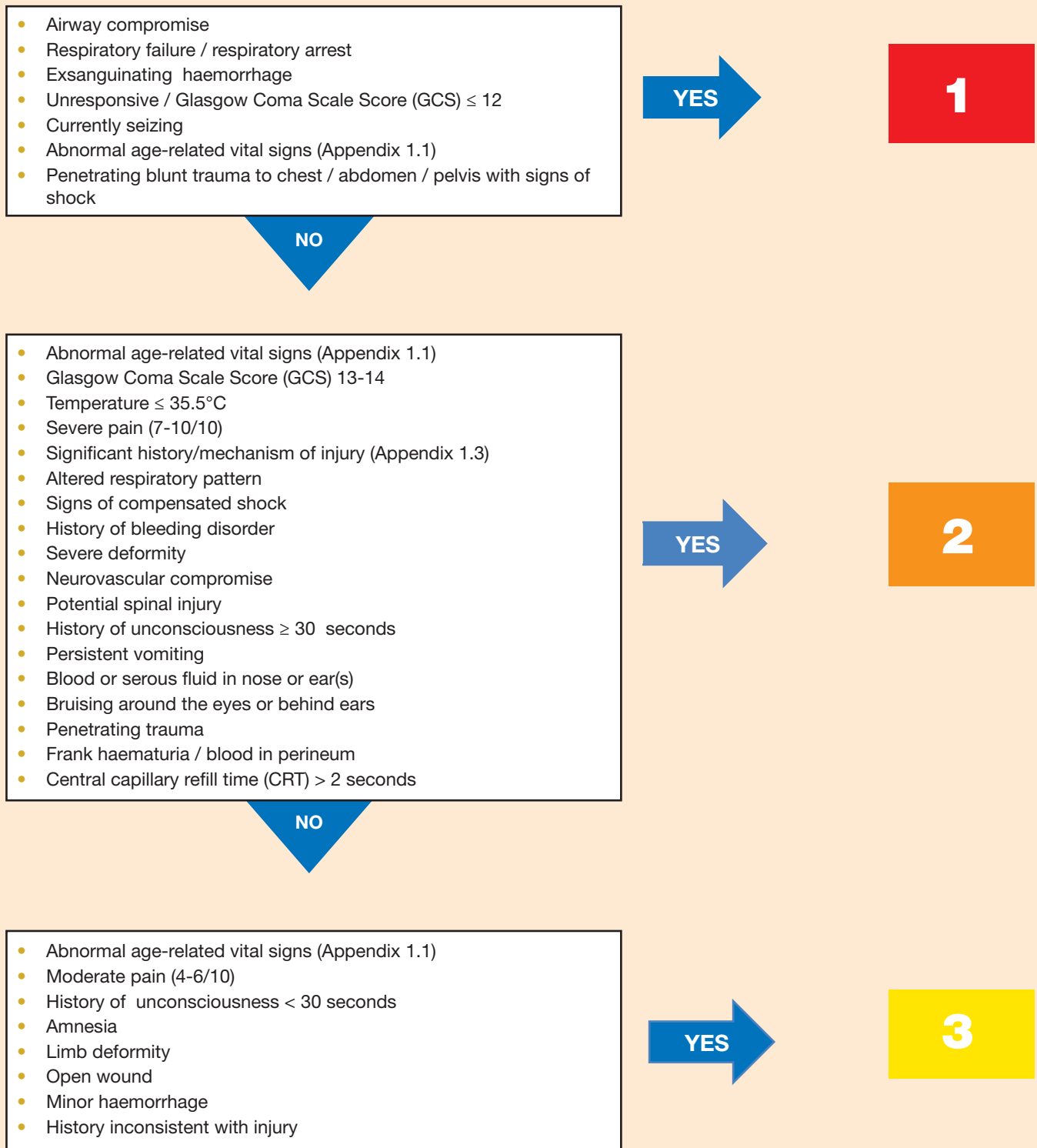
# LIMB PROBLEM OR INJURY

See Appendices for decision making aids and reference charts



# MAJOR TRAUMA

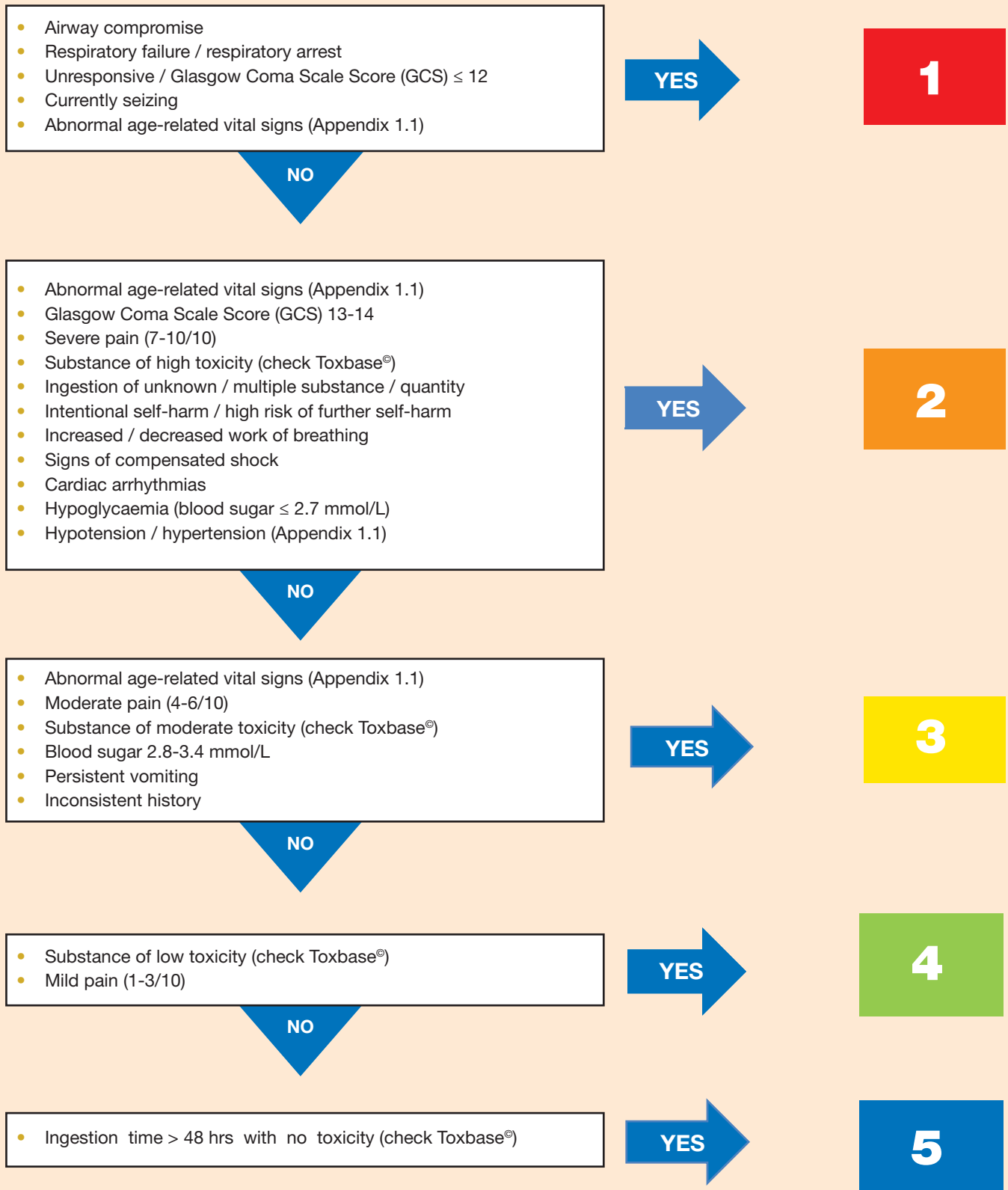
See Appendices for decision making aids and reference charts



**These patients should never be triaged less than Category 3**

# OVERDOSE AND POISONING

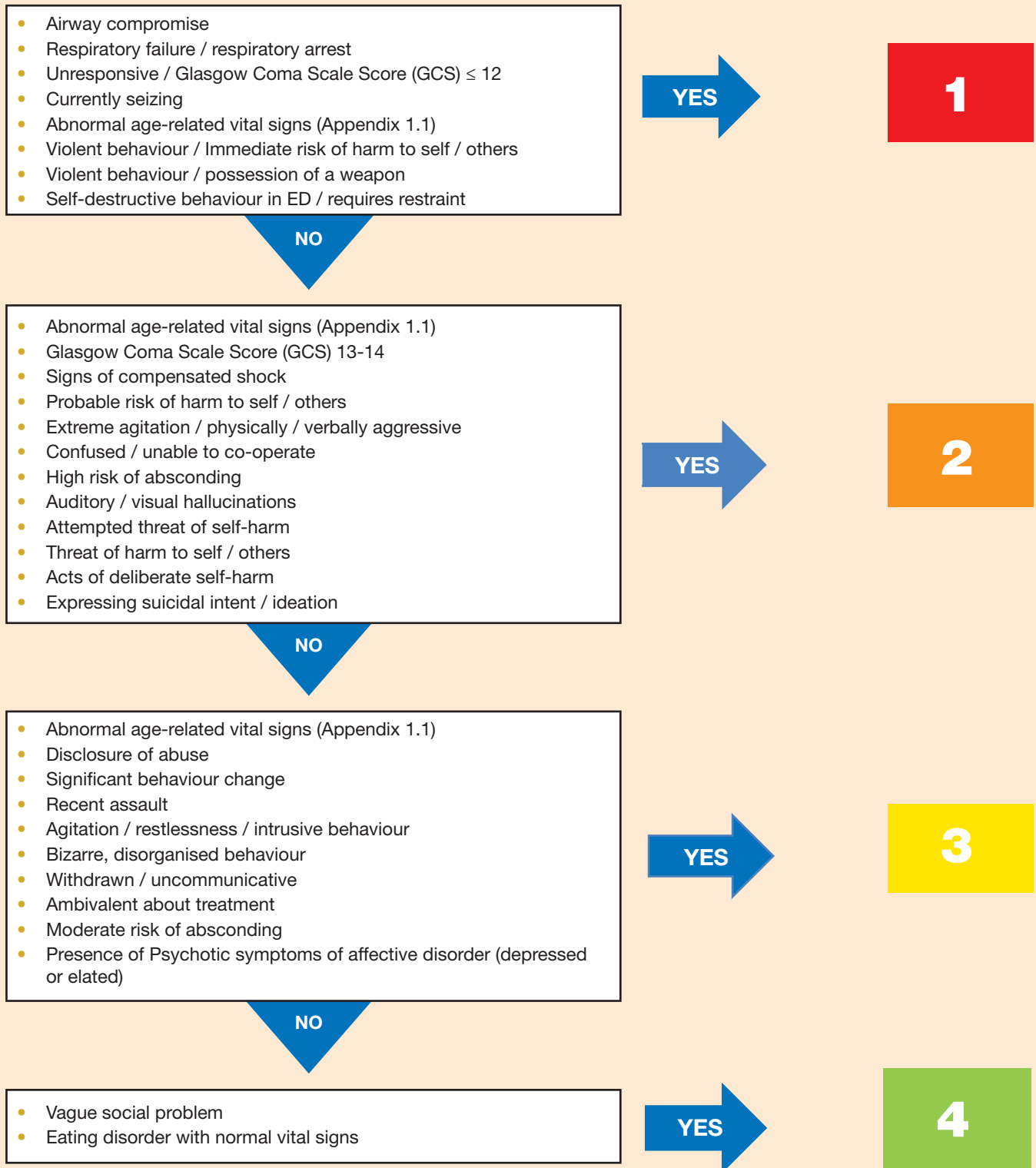
See Appendices for decision making aids and reference charts



**If patient exhibits a psychosocial problem, refer to “Psychosocial Problem (including self-harm)” flowchart**

# PSYCHOSOCIAL PROBLEM (including Self-harm)

See Appendices for decision making aids and reference charts

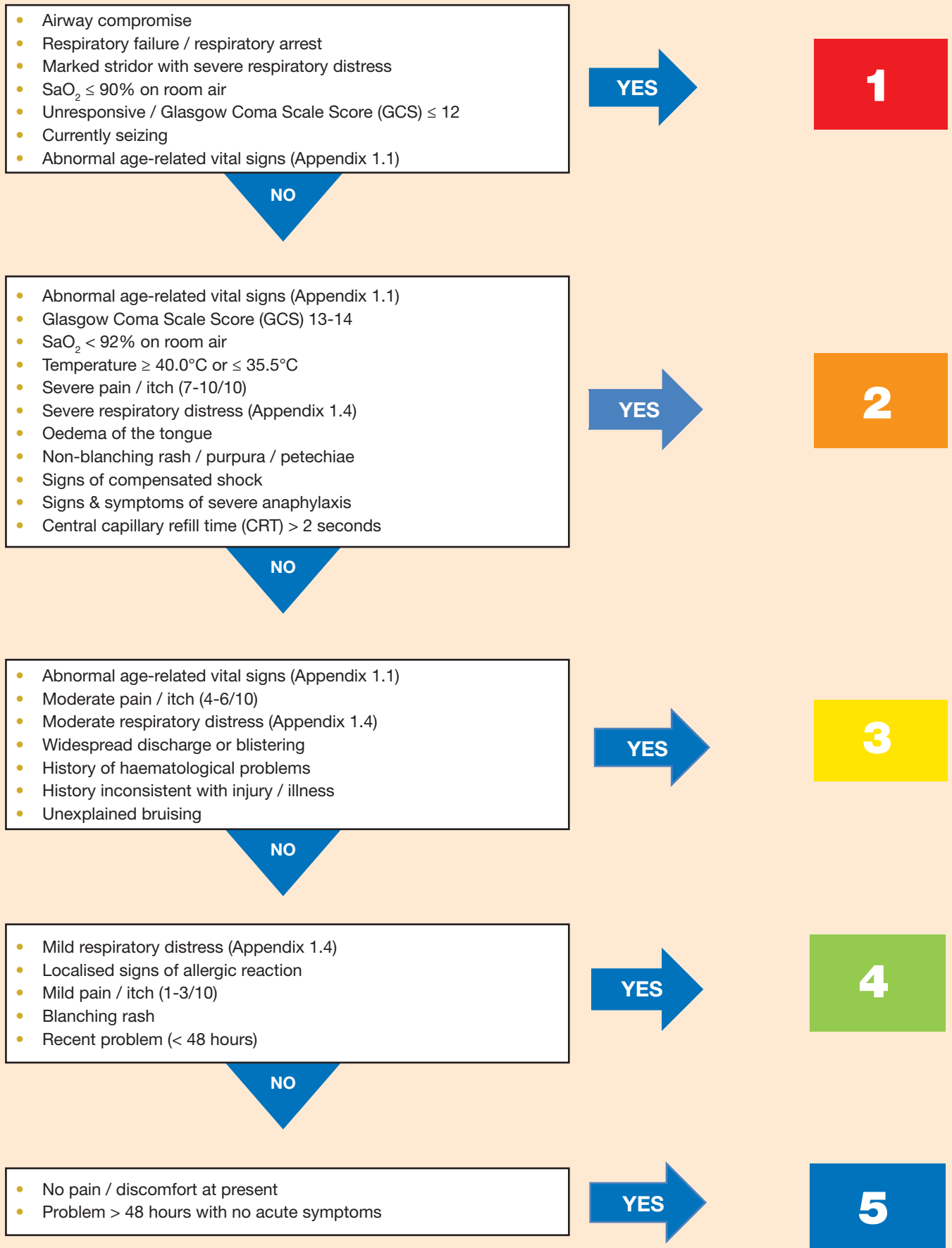


**These patients should never be triaged less than Category 4**

**If ingestion of substances is suspected or confirmed refer to “Overdose and Poisoning” flowchart**

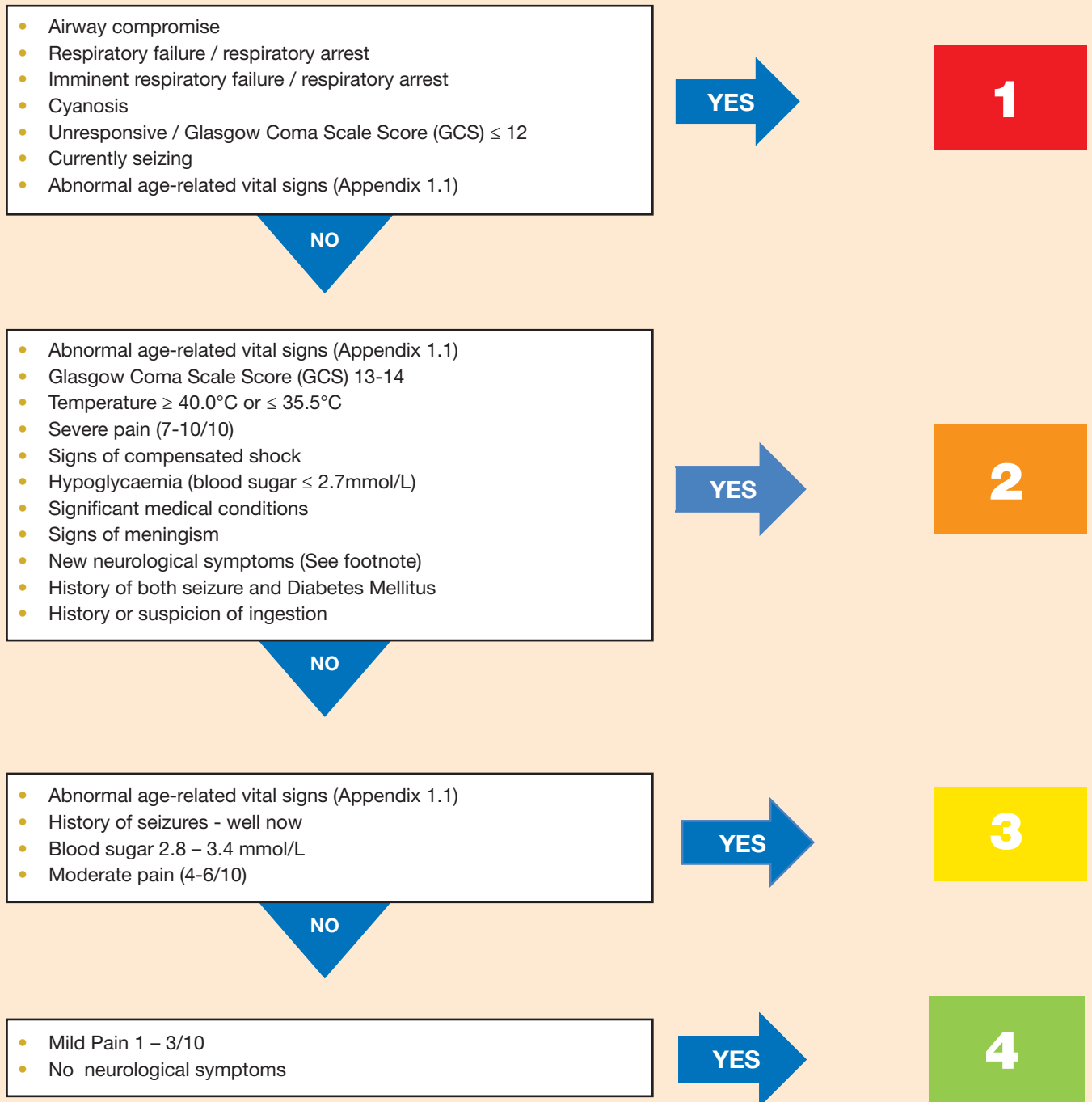
# RASHES (Blanching / Non-Blanching)

See Appendices for decision making aids and reference charts



# SEIZURE / ABSENT EPISODE / COLLAPSE

See Appendices for decision making aids and reference charts

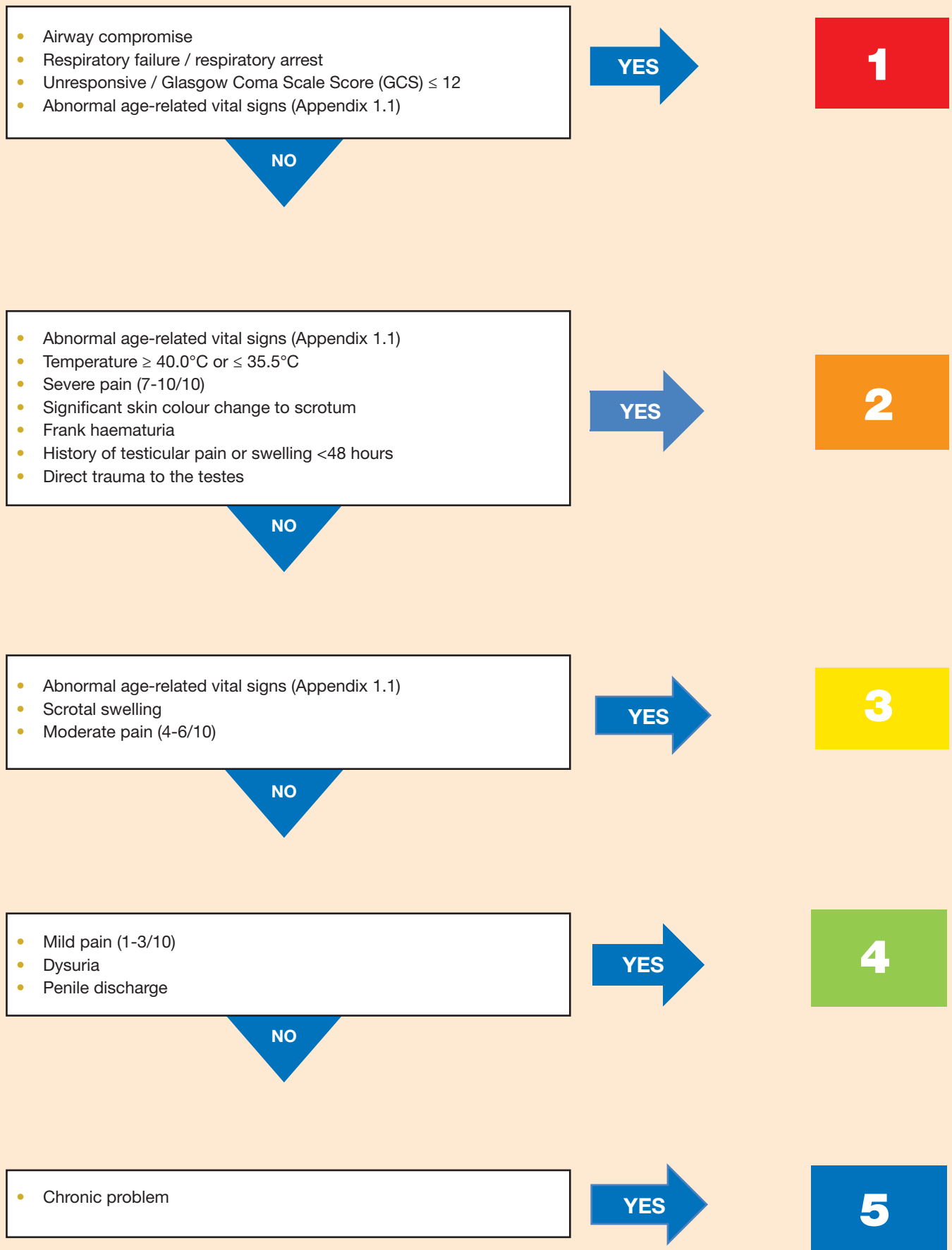


**These patients should never be triaged less than Category 4**

**\* New neurological symptoms = sudden onset of confusion, weakness / irritability or drowsiness. Symptoms may also include altered level of consciousness, loss of sensation, limbs weakness or alterations in bladder or bowel function**

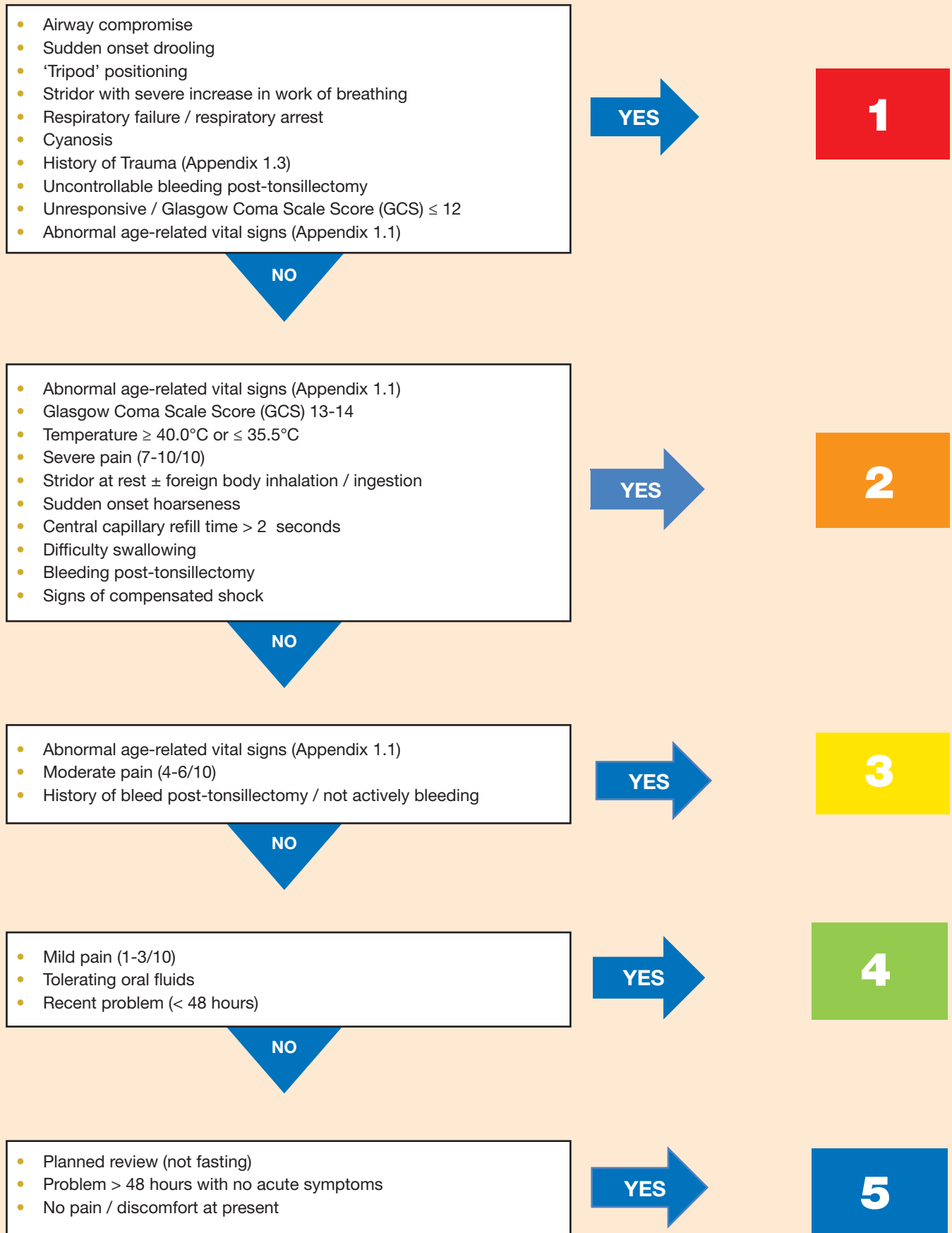
# TESTICULAR PAIN

See Appendices for decision making aids and reference charts



# THROAT PROBLEM

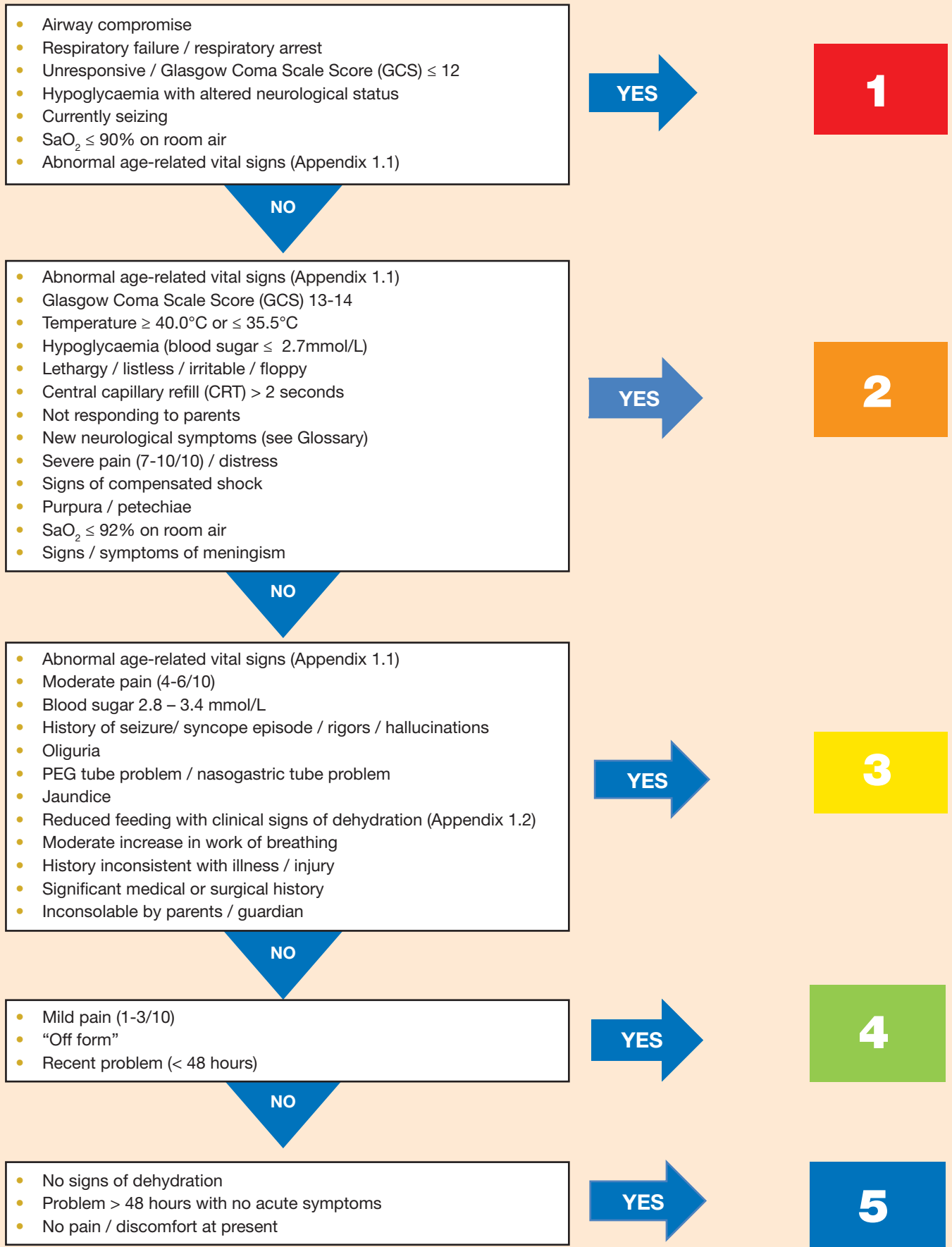
See Appendices for decision making aids and reference charts





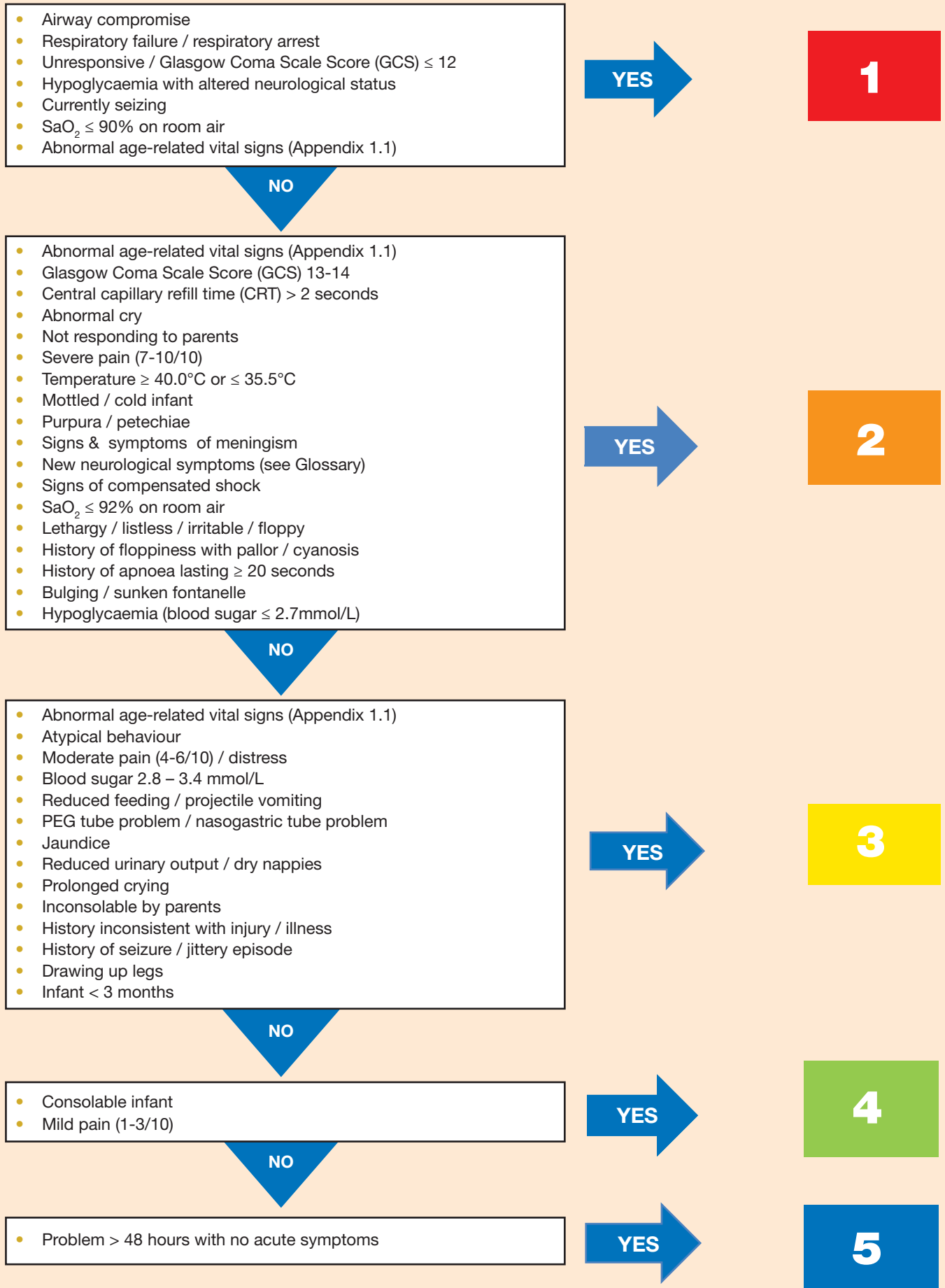
# UNWELL CHILD (over 1 year) (including Pyrexia)

See Appendices for decision making aids and reference charts



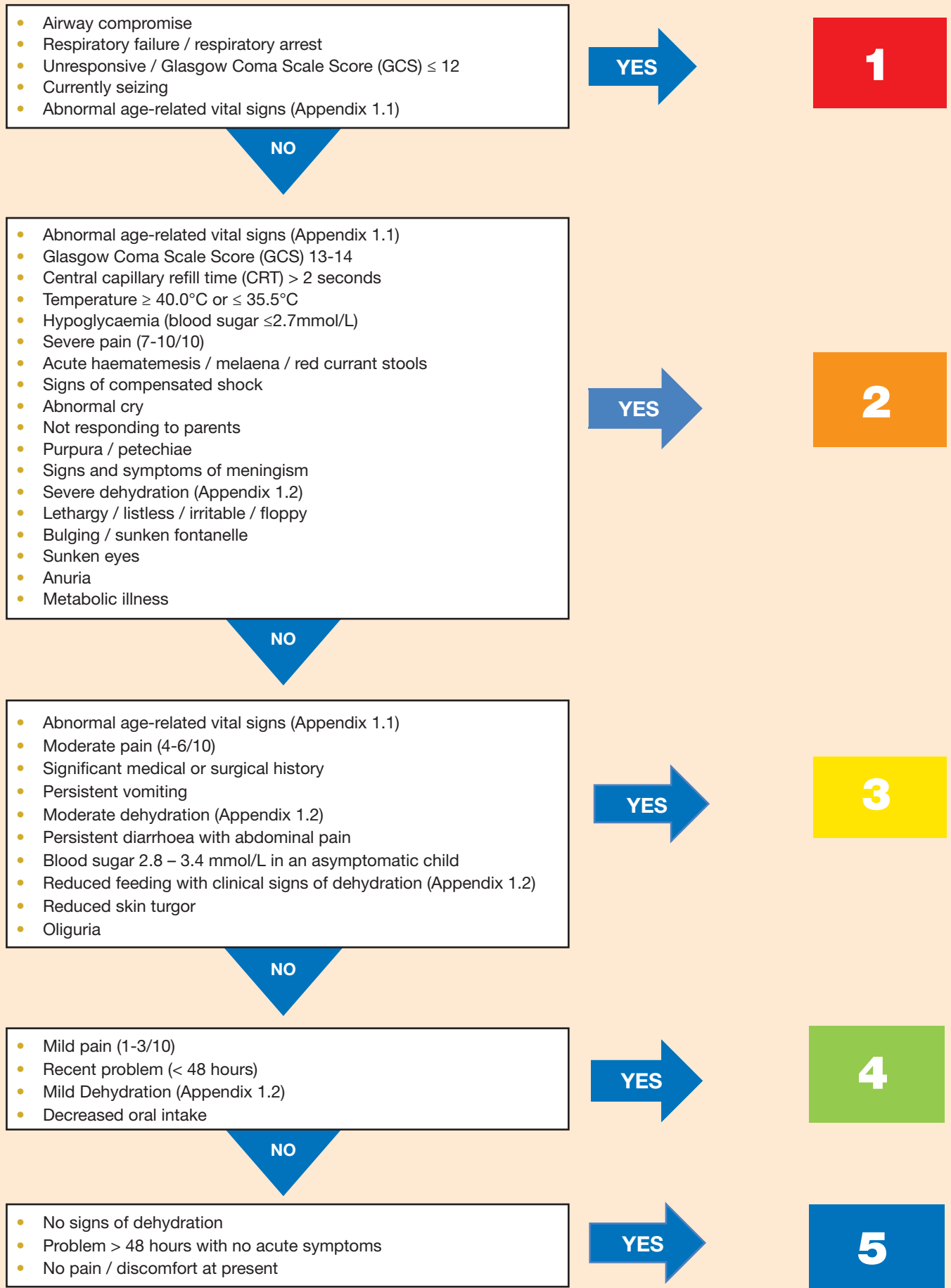
# UNWELL INFANT (less than 1 year) (including Pyrexia)

See Appendices for decision making aids and reference charts



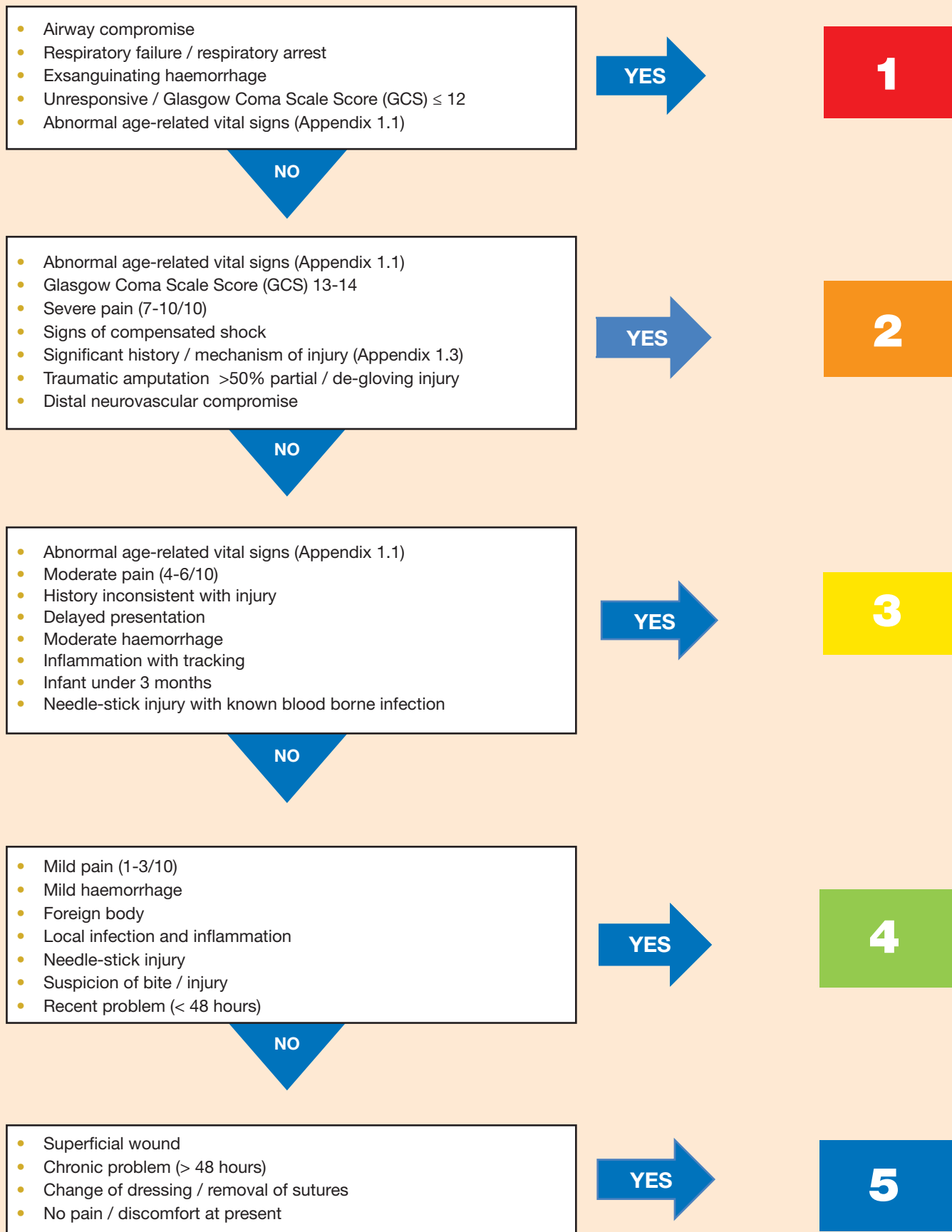
# VOMITING ± DIARRHOEA

See Appendices for decision making aids and reference charts



# WOUNDS / SIGNS OF LOCAL INFLAMMATION

See Appendices for decision making aids and reference charts



## 7. PATIENT FLOW

Following triage, children (based on their triage category, age, immunisation status and infection prevention and control status) are allocated to the most appropriate area, e.g. resuscitation room, a clinical area, a fast track area or the waiting room.

Critically ill children are moved immediately to the resuscitation room, where triage may be undertaken simultaneously, with the clinician's assessment and treatment plan, so that critical care is commenced maximising the potential for a good outcome.

Children who do not require major resources for assessment and treatment may be seen in a low-intensity (fast-track / ambulatory unit) area by a Clinician. Identifying these children as early as possible after their presentation, permits the ED to maximise resources and clinical space, allowing appropriate resources to be invested in sicker children at the same time as the less acute and less resource-dependent patients have their needs met.

Introducing a GP service to a paediatric ED service can significantly reduce waiting times and admissions, but may lead to more antibiotic prescribing (Smith *et al.* 2018). Another suggestion to the management of patient flow in the paediatric ED is the allocation of a senior clinician at triage. This has the potential to increase the proportion of children being seen on time, reduce the length of stay and reduce the number of patients who leave before completion of treatment (Andrews *et al.* 2020).

## 8. TRIAGE CONTINGENCY PLAN

Triage is typically the first instance of clinical contact for children and their parents / carers presenting to ED. Patients who attend ED should be triaged as soon as possible as it is a consistent point at which emergency care begins. The National Emergency Medicine Programme (HSE, 2012) recommend that 95% of patients are triaged within 15 minutes of their arrival to ED. Internationally, it is recommended that a triage assessment should take no longer than two to five minutes to obtain sufficient information to determine the urgency and identify any immediate care needs. However, it has been previously acknowledged in the literature that triage of children may take longer (Gilboy *et al.* 2012).

The triage process tends to incur delays especially in the younger age group as infants and small children differ from adults both physiologically and psychologically. Privacy also needs consideration as exposing children is mandatory in a number of circumstances particularly where rashes need to be assessed or small infants need to be weighed. Parental anxiety is a factor that cannot be overstated or overlooked and is often allayed by the triage nurse.

The triage process needs to be comprehensive to determine acuity, as many of the indicators in children are subtle and many require a full set of vital signs to determine triage category. Therefore, a single triage may exceed 15 minutes for small children and infants. In addition the triage nurse validates that the information on the name band is correct and initiates post triage monitoring observations.

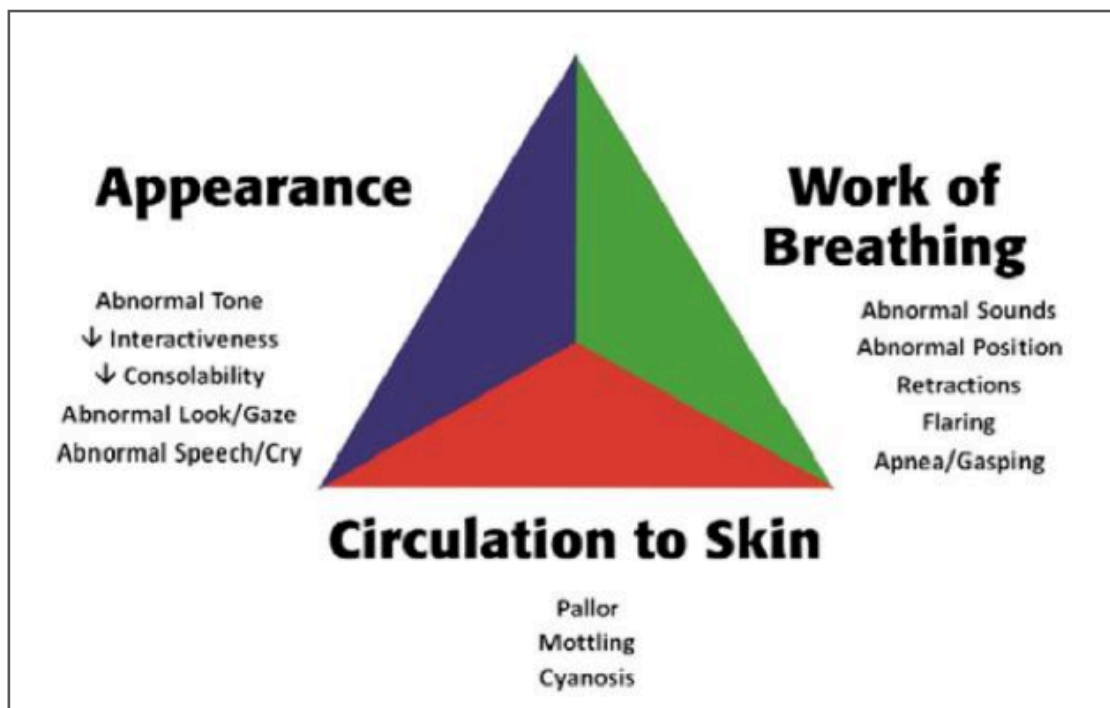
Consistency of triage is optimised for children when age, historical data and clinical presentation are all included in the triage assessment. Developing a rapport with this patient group and their parent(s) / carer(s) is essential in order to elicit the maximum amount of information in a short timeframe and give help, reassurance and support to families. Unfortunately, all these elements cause triage to take longer than the recommended two to five minutes and this has an implication for other children who have presented to ED.

The Triage Contingency Plan is designed for times when the triage process is prolonged and there are either a significant amount of patients awaiting triage and / or activity in ED cannot meet the demand for triage in a timely manner.

### 8.1 Procedure for Triage Contingency Plan

- The nurse-in-charge may activate Triage Contingency at any given time if acuity in the department and / or the amount of patients awaiting triage exceeds resources to ensure that all patients receive prompt assessment. This may occur in two phases.
- **Phase 1:** A decision is made to reallocate additional nurses from other areas to triage patients, to ensure that children are triaged in a timely manner. If this does not alleviate pressure on triage the Triage Contingency Plan is activated utilising the Paediatric Assessment Triangle (PAT)
- **Phase 2:** PAT is a rapid assessment tool that uses only visual and auditory clues, requires no equipment, and takes 30-60 seconds to perform. The nurse-in-charge uses his / her

observational skills and experience to identify critically ill children during Contingency Triage. A Category no lower than 3 is allocated to each patient (Figure 8.1 Paediatric Assessment Triangle).



**Figure 8.1** Paediatric Assessment Triangle (created and supported by The American Association of Pediatrics, Dieckmann et al. 2000)

**Appearance** is assessed using the mnemonic “TICLS” (Dieckmann et al. 2010) based on an assessment of

- **T**one
- **I**nteraction / Interactiveness
- **C**onsolability
- **L**ook / gaze (abnormal)
- **S**peech / cry (abnormal)

**Breathing** is based on a quick respiratory assessment

**Colour** is an indication of respiratory and / or circulatory function

- If the Administrative staff alert nursing staff to concerns regarding a child’s condition during registration activation of the contingency period, this child receives an assessment using the Paediatric Assessment Triangle simultaneously with registration and a preliminary triage category (category 1, 2 or 3) should be assigned as outlined above.
- Category 1 patients will be fully assessed and treated in the resuscitation room, Category 2 patients will be sent as a priority to Cubicles / Triage / Resuscitation Room.

- Children assigned Category 3 are asked to take a seat in the waiting room (if infection prevention and control status permits). Whilst waiting for triage, parents / carers are asked to advise staff at any stage if they are concerned regarding their child's condition. This category may be altered (to a higher or lower acuity triage category) as the child receives a more detailed assessment by the triage nurse.
- During Triage Contingency the triage nurse(s) continues to call children into triage for full assessments unless advised otherwise.
- If there are no children currently awaiting medical assessment, any category of patient may be triaged and receive a medical assessment simultaneously. The triage process can be by-passed by a clinician who is ready to see a child who has registered but is yet to be triaged.

When the situation is under control, normal triage practices resume. The activation of the Triage Contingency Plan may be documented on the incident report system. The information may also be used when staffing levels and skill mix are being reviewed.



## 9. EDUCATION AND TRAINING

Education and training on the Irish Children's Triage System (ICTS) is essential to ensure that the triage tool for children is used in a consistent manner throughout Ireland. It is recognised that training courses in triage have a significant impact on the accuracy of triaging of ill children (Tam *et al.* 2018). It is accepted that there is a need for triage training to be standardised across emergency departments to maintain inter-rater reliability (Azzam *et al.* 2019). The Emergency Nursing Interest Group agreed that each site should have 'Super-Trainers' that attend a full study day to give them the skills and knowledge to provide the 'training' programme locally. This allows these trainers to provide formal training and facilitate frequent refresher triage training sessions. Regular refresher triage training, collaboration between emergency departments and continuous monitoring are necessary to strengthen the use of ICTS and improve nurse's triage performance and are influential in triage accuracy.

However, at times, despite extensive and on-going training under triage and over triage of patients continues (Ghafarypour-Jahrom *et al.* 2018). It is recommended that a combined approach of paper-based cases and high-fidelity simulation is effective at improving paediatric triage accuracy among a group of general ED nurses with limited exposure to paediatric patients (Recznik *et al.* (2019).

When using MTS for children it was identified that the most common used flow chart was 'worried parents' (Amthauer *et al.* 2016). Auditing of ICTS will ensure that the most appropriate flow charts are being used based on presenting complaint. This is dependent on having access to an electronic triage system which is currently not available in all EDs in Ireland.

## 10. VALIDITY OF ICTS

Triage audit is undertaken in each ED and UCC to monitor and evaluate how the system is working, identify and correct errors and sustain reliability. Triage is one of the highest risk activities in the ED / UCC and therefore it is crucial that the practice is continuously monitored. Triage errors create risk of increased mortality and / or morbidity. The incidence of adverse events in EDs / UCCs may be lowered by accurate triage decisions. Currently, validity of a triage system is determined by patient outcome which identify that the system can 'truly' identify the 'sickness' (Tam *et al.* 2018). Triage tools are validated based on risk of mortality, hospitalisation, critical illness and inter-rater-reliability (Green *et al.* 2012, Hinson *et al.* 2018). Admission rate and admissions to a High Dependency Unit/Intensive Care Unit has been widely used as a surrogate marker for acuity and severity of illness. On-going auditing of triage will assist with monitoring of the triage process.

Other measures that may be used are for validating the triage process are, length of stay (LOS) and left before completion of treatment rate (LBCT) (Allon *et al.* 2018). However, even though there are ideal recommended maximum time lines for the Clinician to assess and treat the lower triage categories, these patients are not always seen at these recommended time lines. In many hospitals, there are prolonged waits for an inpatient bed and if LOS is used as an indicator of the allocation of the correct triage category it might be more appropriate if the length of stay was measured on discharged patients only. In addition, some hospitals have limited out of hours laboratory, radiological and specialist review access, therefore children may have to wait for prolonged periods to have investigations / specialist reviews carried out. The limitations of these services frequently have nothing to do with the appropriateness and validity of the triage process. Parents of children who leave before the completion of treatment leave for a variety of reasons and it is difficult to suggest that the reason for leaving before completion of treatment is due to an initial incorrect triage category.

It has been suggested that validity of the MTS in emergency care is moderate to good, with lowest performance in the young and elderly patients (Zachariasse *et al.* 2017). On review of the Irish data based on limited data provided, the percent of admitted patients per triage category is difficult to use as a marker as the paediatric hospitals have an admission rate of 10% -14% whilst in regional hospitals, the admission rate for children is as high as 28%.

Figures 10.1-10.3 identify the annual data from one tertiary paediatric ED for 6 years 2014-2019 based on attendance rate per triage category, admission rates based on the initial triage categories and triage categories as a percentage of overall admission rate are all relatively consistent year on year when one ED is studied in detail.

Overall % of annual attendances per triage category 2014 - 2019  
(n=224,543 patients)

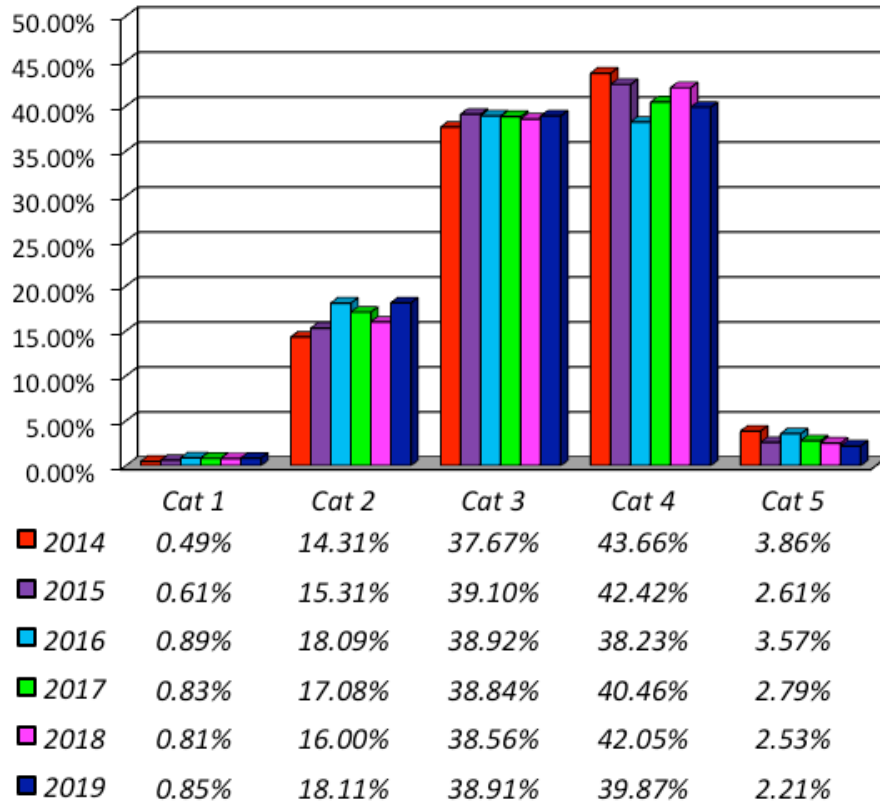
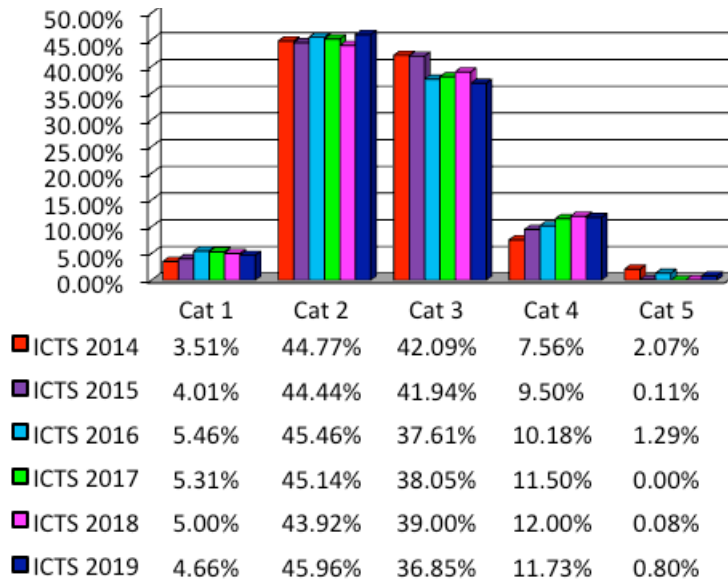


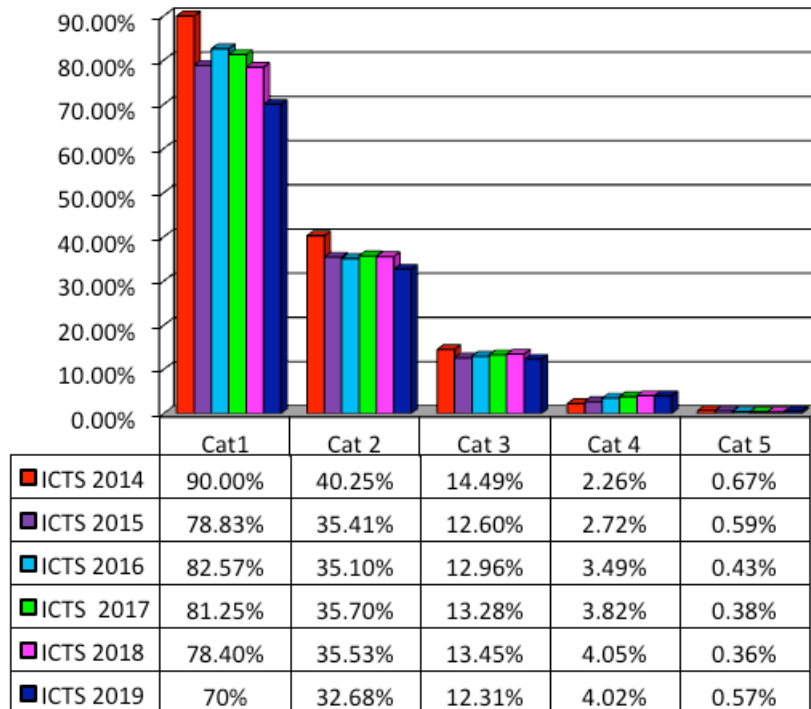
Figure 10.1 Data from a Paediatric Emergency Department since the introduction of ICTS on attendance rates per triage category 2014-2019 (inclusive)

**Triage categories of admitted patients as a percentage of overall admission rate in a paediatric only Emergency Department (n= 29,152 admissions)**

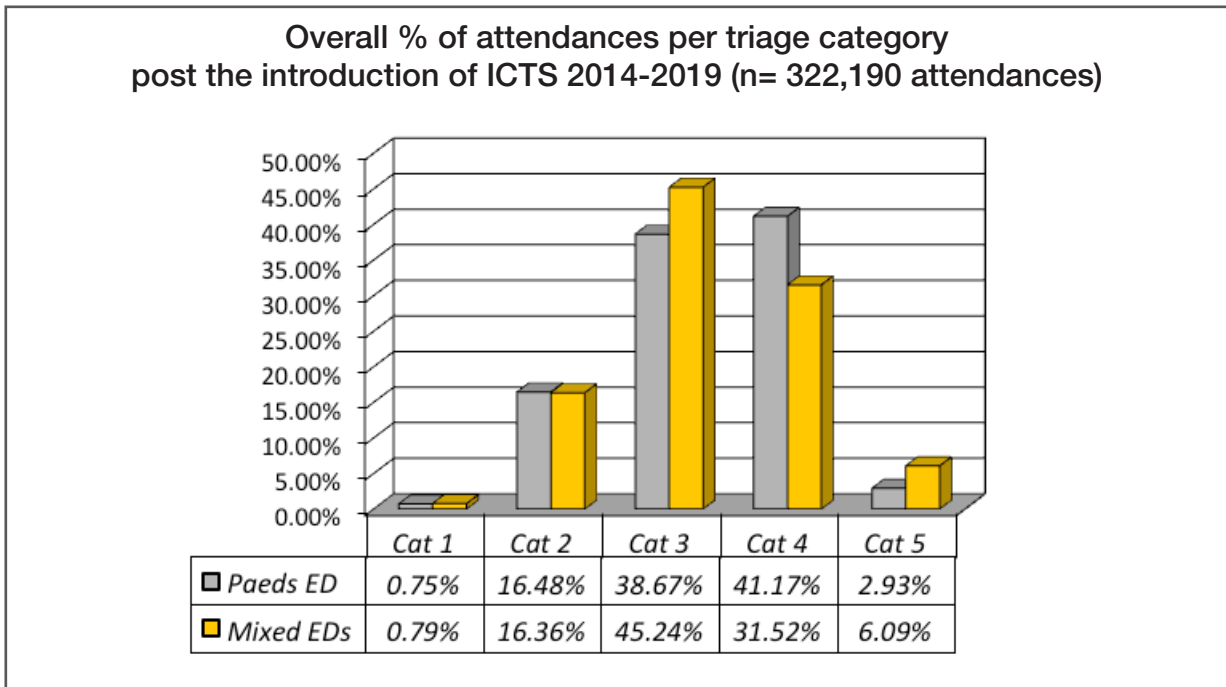


**Figure 10.2** Triage categories of admitted patients as a percentage of overall admission rate in a paediatric only Emergency Department (n= 29,152 admissions)

**Annual admission rates per triage categories 2014-2019 (n= 29,152 admissions)**

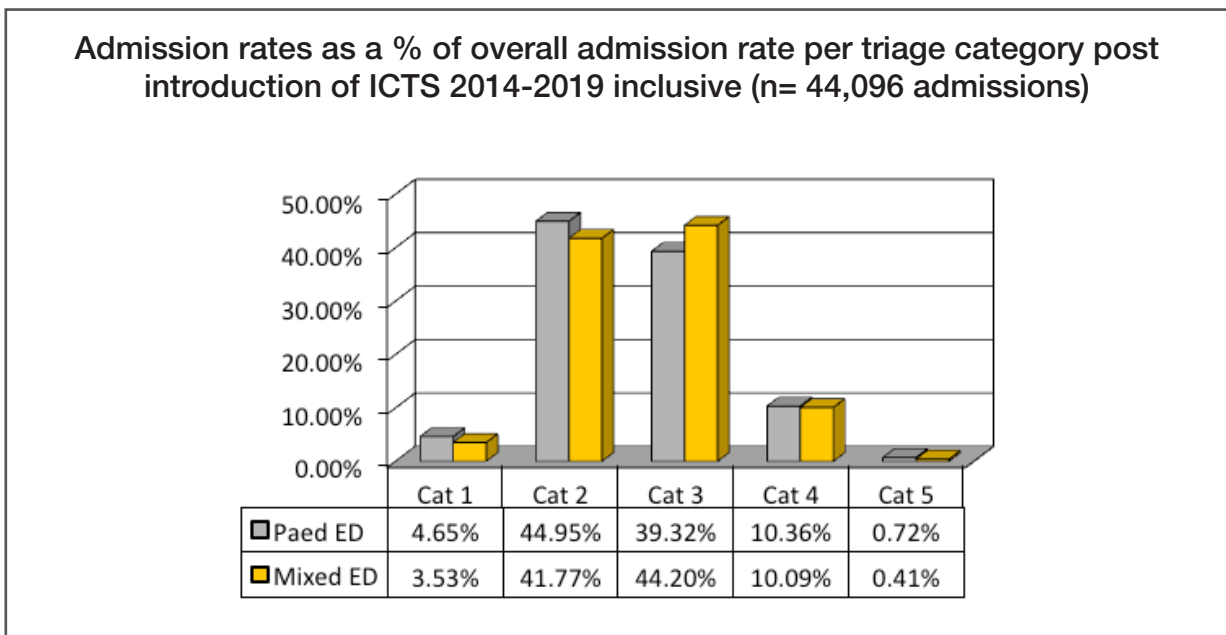


**Figure 10.3** Annual data from a Paediatric Emergency Department on admission rates per triage category 2014-2019 (inclusive)

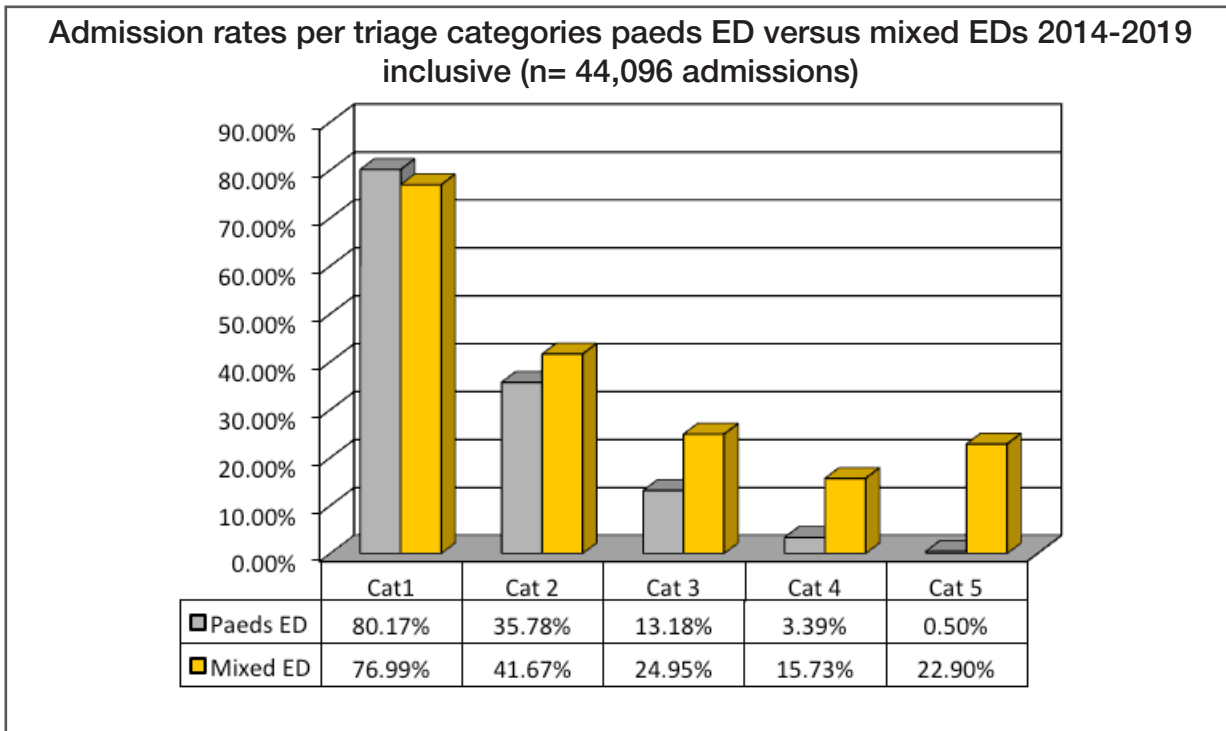


**Figure 10.4** Paediatric Emergency Department/mixed Emergency Departments on attendance rates per triage category 2014-2019 (inclusive)

The data that could be provided nationally on triage and admission per triage categories for the period 2014-2019 was very limited due to challenges with IT systems throughout the country. However limited the data is, it has been analysed (Figures 10-4-10.6) to determine how similar the triage categories and admissions per triage categories are when comparing a paediatric ED data to mixed ED data.

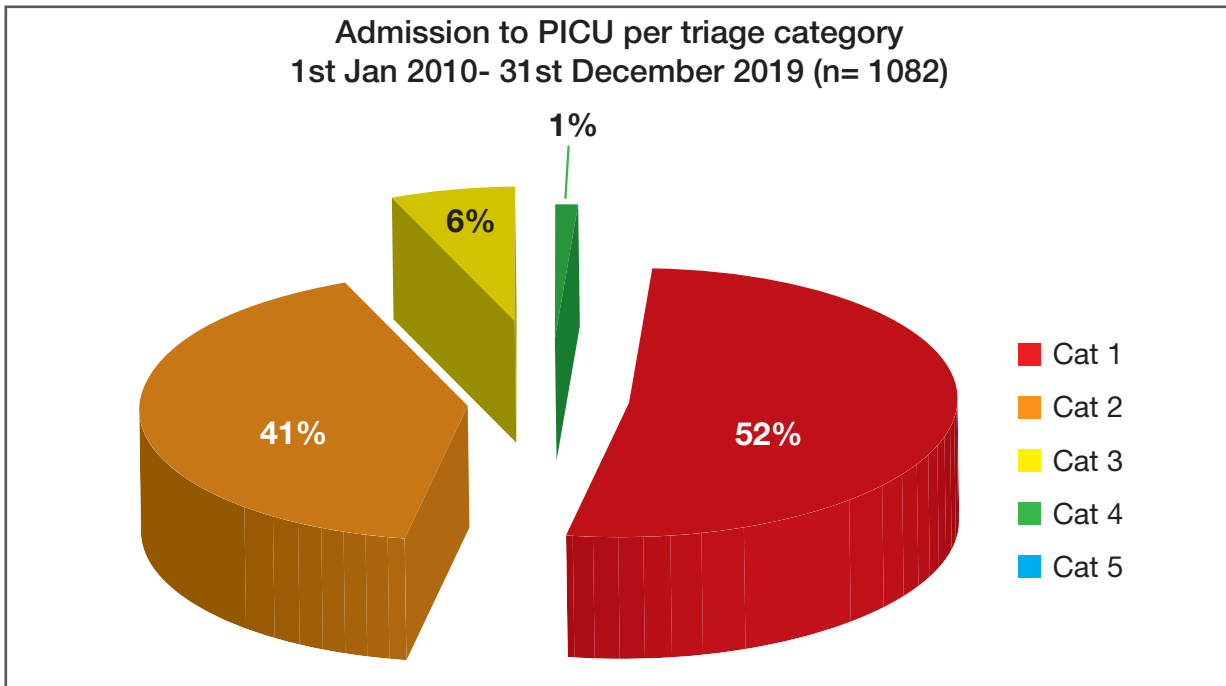


**Figure 10.5** Paediatric Emergency Department / Mixed Emergency Departments on admission rates per triage category as an overall % of admissions 2014-2019 (inclusive)



**Figure 10.6** Paediatric Emergency Department/Mixed Emergency Departments on admission rates per triage category 2014-2019 (inclusive)

Data from a tertiary paediatric ED (Figure 10.7 below) demonstrated that 93% of all admissions to a Paediatric Intensive Care Unit (PICU) were initially triaged as a triage category 1 or 2. The remaining 6% of children who were subsequently admitted to PICU received a triage category 3.



**Figure 10.7** Triage categories of children requiring admission to a Paediatric Intensive Care Unit from one Paediatric Emergency Department 2014-2019 (inclusive)

## 11. CONCLUSION

Overcrowding in Emergency Departments (EDs) is an ever increasing problem. Internationally, increasing attendances in EDs / UCCs may compromise their effectiveness and quality.

The Irish Children's Triage is recommended for use to prioritise children with critical and time sensitive illness based on presenting complaining, general appearance, age, past medical history, vital signs and other assessments as indicated in the 24 specific Flow Charts. It gives consideration to where the patient might be best placed post triage and determines the need for on-going individualised monitoring. There is a contingency plan for triage in place to assist the ED when activity overwhelms the triage process and therefore allows the child to have a basic assessment to determine risk / critical illness.

On-going education and training on the triage process is essential for maintaining standardisation of the allocation of triage categories ensuring that ill children are not under-triaged or ED / UCC is not overwhelmed due to children being unnecessarily over-triaged.

The on-going evaluation of the performance of triage systems in a paediatric environment is essential. Waiting times affect the quality of care for acutely ill children and accurate triage of children reduces the incidence of adverse events in ED / UCC ensuring the provision of effective, safe, quality care.

## 12. GLOSSARY OF TERMS

Terms	Explanation
<b>Abdominal trauma</b>	Physical damage to the abdomen caused by violence or an accident. Injury can be blunt or penetrating and may cause significant damage to the underlying organs with or without obvious external signs of trauma
<b>Abnormal pupil</b>	The pupil of the eye does not respond to a light stimulus, or is an abnormal shape
<b>Abrasions</b>	Produced by a rough surface striking the body tangentially removing part of the outer layer of skin
<b>Actively bleeding</b>	Bleeding that continues to ooze or bleed despite the application of sustained pressure
<b>Acute haematemesis</b>	The sudden onset of vomiting of blood
<b>Acute reduced visual acuity</b>	A sudden loss in the acuteness or clearness of vision
<b>Acutely avulsed permanent tooth</b>	A permanent tooth that has been forcibly and traumatically displaced from its normal position, completely forced from its alveolar socket within the last 24 hours
<b>Agitation</b>	Agitation is an unpleasant state of extreme arousal. An agitated child may feel excited, tense, confused or irritable
<b>Airway compromise</b>	An airway may be compromised either because it cannot be kept open or because the airway protective reflexes (that stop inhalation) have been lost
<b>Airway obstruction</b>	Partial or complete blockage of the airway preventing air entering the lungs.
<b>Allergic reaction</b>	Symptoms and signs of an allergic reaction include any, some, or many of the following: <ul style="list-style-type: none"> <li>• <b>Skin:</b> irritation, redness, itching, swelling, blistering, weeping, crusting, rash, eruptions or hives (itchy bumps or welts)</li> <li>• <b>Lungs:</b> wheezing, tightness, cough, shortness of breath</li> <li>• <b>Head:</b> swelling or bumps on the face and neck, eyelids, lips, tongue, or throat, hoarseness of voice, headache</li> <li>• <b>Nose:</b> stuffy nose, runny nose (clear, thin discharge), sneezing</li> <li>• <b>Eyes:</b> red (bloodshot), itchy, swollen, or watery or swelling of the area around the face and eyes</li> <li>• <b>Abdomen:</b> abdominal pain, nausea, vomiting and/or diarrhoea,</li> <li>• <b>Other:</b> fatigue, sore throat</li> </ul>
<b>Altered blood glucose</b>	Abnormal high or low levels of glucose in the blood



<b>Altered bowel habit</b>	Any change in stool frequency and consistency of defaecation
<b>Altered neurological status</b>	A patient who is not fully alert, and may only respond to voice or pain (Glasgow Coma Scale score <15/15)
<b>Amnesia</b>	Amnesia refers to an inability to recall information that is stored in memory. In simple terms, amnesia is the loss of memory. The causes of amnesia may be <i>organic or functional</i>
<b>Anaphylaxis</b>	A potentially life-threatening, rapidly developing allergic reaction that affects a number of different body systems at one time. Anaphylaxis is a medical emergency and requires immediate treatment
<b>Anuria</b>	Cessation of urine production
<b>Apnoeic episodes</b>	Temporary absence or cessation of breathing
<b>Auditory hallucinations</b>	Hallucination that involves perceiving sounds without auditory stimulus
<b>Auricular haematoma</b>	Accumulation of blood in the auricle of the ear, which can cause swelling and pain
<b>Blanching rash</b>	Rash fades or disappears when pressure is applied
<b>Blistering rash</b>	Thin vesicle on the skin, containing watery matter or serum, as from a burn or other injury
<b>Blood in perineum</b>	Blood visible between the anus and the scrotum in the male and between the anus and the vulva in the female
<b>Blood sugar</b>	The blood sugar concentration or blood glucose level is the amount of glucose sugar present in the blood
<b>Blunt abdominal trauma</b>	A type of physical, non-penetrating trauma to the abdomen, caused either by impact, injury or physical attack. It may cause significant damage to the underlying organs with or without obvious external signs of trauma
<b>Boggy swelling</b>	Boggy is used to describe something that, on physical examination, feels like it has fluid in it. For example, in rheumatoid arthritis joints in the hand may feel boggy
<b>Bradycardia</b>	A pulse rate that is below normal for age (see Vital Signs Reference Grid)
<b>Bradypnoea</b>	A respiratory rate that is below normal for age (see Vital Signs Reference Grid)
<b>Bruise</b>	A traumatic injury of the soft tissues which results in the breakage of the local capillaries and leakage of red blood cells. In the skin it can be seen as a reddish-purple discolouration that does not blanch upon pressure. When a bruise fades it becomes green and brown. Also called a contusion
<b>BSA</b>	Body Surface Area

<b>Burns (Thermal injury)</b>	<ul style="list-style-type: none"> <li>• <b>Burn:</b> An injury to flesh or skin caused by heat, chemicals or radiation</li> <li>• <b>Circumferential burn:</b> The burn encircles an entire body part. May cause neurovascular compromise to the body part</li> <li>• <b>Chemical burn:</b> A burn caused by a chemical substances</li> <li>• <b>Electrical injuries:</b> Relatively uncommon. Children with electrical burns are predominantly injured in the household setting. The spectrum of electrical injury is broad, ranging from minimal injury to severe multi-organ involvement to death</li> <li>• <b>Flame burn:</b> A burn caused by heat or flame also called a thermal burn</li> <li>• <b>Scald:</b> Caused by hot liquids or steam</li> <li>• <b>Full thickness:</b> Third degree burn occurs with destruction of the entire epidermis and dermis, leaving no residual epidermal cells to repopulate</li> <li>• <b>Partial thickness:</b> This burn destroys the epidermal layer and portions of the dermis. Since it does not extend through both layers, it is termed a partial thickness burn</li> <li>• <b>Minor burn:</b> A minor burn is confined exclusively to the outer surface and is not considered a significant burn. No barrier functions are altered</li> </ul>
<b>Cardiac arrhythmias</b>	<p>Arrhythmias occur when the electrical impulses to the heart do not function correctly. There are hundreds of different types of cardiac arrhythmias which may lead to abnormally fast heart rates, abnormally slow heart rate irregular heartbeats or death</p>
<b>Central capillary refill time</b>	<p>Capillary time is the speed at which blood returns to the capillary bed after cutaneous pressure on the sternum for 5 seconds (normal <math>\leq 2</math> seconds). It should never be measured in isolation and should be considered along with other clinical signs</p>
<b>Compensated shock</b>	<p>Blood flow to vital organs i.e. heart and brain is spared at the expense of non-essential organs. A child in this phase is typically mildly agitated or confused, tachycardic and has cool, pale skin with prolonged capillary refill time</p>
<b>Cyanosis</b>	<p>Bluish discoloration of the skin due to poor circulation or inadequate oxygenation of the blood</p>
<b>Cellulitis</b>	<p>A spreading non-suppurative infection of the soft tissue</p>
<b>Cerebral oedema</b>	<p>An excess accumulation of fluid in or on the brain</p>
<b>Chemical eye injury</b>	<p>Any substance splashed into the eye that causes stinging, burning or reduced vision</p>
<b>Chronic problem</b>	<p>Lasting for a long period of time or marked by frequent reoccurrences. The term chronic is usually applied when the course of the disease lasts for more than three months</p>

<b>Clinical signs of dehydration</b>	See <i>Dehydration</i>
<b>Coma</b>	A sleep-like state in which a person is not conscious
<b>Co-morbidity</b>	The presence of co-existing or additional disease with reference to either an initial diagnosis or to the index condition that is the subject of study. Co-morbidity may affect the ability of affected individuals to function and their survival. It may be used as a prognostic indicator for length of hospital stay, cost factors and outcome or survival
<b>Compound fracture</b>	A fracture communicating with the surface of the skin via a wound
<b>Confusion</b>	Where a patient may be able to hold a conversation with the observer but cannot accurately answer the observer's questions
<b>Consciousness</b>	A general awareness of oneself and the surrounding environment
<b>Contusions</b>	Rupture of small blood vessels sustained from a blow with a blunt instrument and causing localised bleeding into the tissue
<b>Critical skin over fracture site</b>	A fracture may leave fragments or ends of bone pressing so hard against the skin that viability of the skin is threatened. The skin will be white and under tension
<b>Currently seizing</b>	Seizing on arrival at the hospital
<b>Deciduous teeth</b>	Any of the temporary primary teeth of an infant/small child
<b>Deformity</b>	Abnormal angulation or rotation / part of the body is misshapen or malformed
<b>Dehydration</b>	<p>The excessive loss of fluid from the body usually with varying degrees of electrolyte imbalance</p> <p><b>Severe Dehydration***</b></p> <ul style="list-style-type: none"> <li>• &gt;10% loss of body weight</li> <li>• Poor peripheral perfusion with prolonged capillary refill time</li> <li>• Cool peripheries</li> <li>• Low blood pressure</li> <li>• Anuria</li> <li>• Lethargic to comatose</li> </ul> <p><b>Moderate Dehydration**</b></p> <ul style="list-style-type: none"> <li>• &gt; 5% loss of body weight</li> <li>• Tachycardia (follow vital signs reference grid)</li> <li>• Poor tear production</li> <li>• Decreased skin turgor</li> <li>• Sunken eyes</li> <li>• Sunken/bulging fontanelle</li> </ul>

	<ul style="list-style-type: none"> <li>• Oliguria</li> <li>• Restless to lethargic</li> </ul> <p><b>Mild Dehydration*</b></p> <ul style="list-style-type: none"> <li>• 5% loss of body weight</li> <li>• Slightly dry mucous membranes</li> <li>• Slightly decreased urine output</li> <li>• Increased thirst</li> <li>• Irritable</li> </ul>
<b>Diabetes mellitus</b>	A patient who has Diabetes Mellitus produces a decreased amount or no insulin
<b>Dialysis</b>	Dialysis is a process for removing waste and excess water from the blood and is used primarily as an artificial replacement for lost kidney function in people with renal failure. There are two types of dialysis: haemodialysis and peritoneal dialysis
<b>Discharge</b>	Emission of material from the body e.g. fluid or pus
<b>Disclosure of abuse</b>	'Disclosure' of abuse occurs when a patient informs you or lets you know in some other way that she or he has been, or is being abused. Disclosure can be direct, indirect or third party disclosure. All disclosures of abuse require reporting, irrespective of where or when they happened
<b>Drooling</b>	Drooling is the unintended spillage of saliva from the mouth. Drooling can occur with any condition that impairs neuromuscular control of the muscles around the mouth, that increases the production of saliva, or that impairs swallowing
<b>Drowsiness</b>	A state of impaired awareness associated with a desire or inclination to sleep
<b>Dysuria</b>	Difficulty urinating, which may include pain, burning or cramps
<b>Eating disorder</b>	A group of conditions defined by abnormal eating habits that may involve either insufficient or excessive food intake or purging to the detriment of an individual's physical and mental health
<b>Expressing suicidal intent/ideation</b>	<p>Suicidal Intent</p> <ul style="list-style-type: none"> <li>• Subjective expectation and desire for a self-destructive act to end in death</li> </ul> <p>Suicidal Ideation</p> <ul style="list-style-type: none"> <li>• Thoughts of serving as the agent of one's own death. May vary in seriousness depending on the specific detailing of suicide plans and the degree of suicidal intent</li> </ul>
<b>Eye injury</b>	A physical trauma to the eye
<b>Facial swelling</b>	Swelling around the face which may be localised or diffuse

<b>Floppy infant</b>	An infant with an abnormally low tone
<b>Focal neurological deficit</b>	A neurological deficit restricted to a particular part of the body or a particular activity
<b>Foreign body</b>	An object or piece of inappropriate matter that has entered the body by accident or design
<b>Frank haematuria</b>	Blood in the urine that is visible to the naked eye
<b>GCS Score (Glasgow Coma Scale Score)</b>	A standardised evaluation technique used to assess changes in state of consciousness and arousal. The system involves three determinants: eye opening, verbal responses and motor response all of which are evaluated independently according to a numerical value that indicates the level of consciousness and degree of dysfunction
<b>Grunting respirations</b>	Noise made on expiration due to an attempt to create a positive end expiratory pressure to prevent airway collapse
<b>Haematoma</b>	An accumulation of blood in or under the tissues
<b>Haemorrhage</b>	<ul style="list-style-type: none"> <li>• <b>Exsanguinating haemorrhage:</b> A haemorrhage which is occurring at such a rate that death will occur unless bleeding is stopped</li> <li>• <b>Severe Haemorrhage:</b> A haemorrhage that is not rapidly controlled by the application of sustained direct pressure and which continues to bleed heavily or soak through large dressings quickly and should be treated very urgently. If the haemorrhage is severe, death will ensure rapidly unless bleeding is stopped</li> <li>• <b>Moderate Haemorrhage:</b> A haemorrhage that is rapidly controlled by the application of sustained direct pressure but which continues to bleed slightly or ooze</li> <li>• <b>Mild Haemorrhage:</b> A minor traumatic from a small or surgical wound which stops spontaneously</li> </ul>
<b>High risk of further self-harm</b>	Patients who have a significant history of self-harm and/or are actively trying to harm themselves
<b>History inconsistent with injury</b>	If the alleged mechanism does not explain the apparent injury or illness or the history is not consistent with different versions been given by different witnesses. Also if the extent of the injury is not consistent with the history given/mechanism of injury. May include a pattern of injury which could be consistent with abuse
<b>History of ingestion of foreign body</b>	A reliable history of ingestion of a foreign substance
<b>History of recent head injury</b>	A history of a recent physically traumatic event involving the head

<b>History of renal transplant</b>	Replacement of a diseased, damaged, or missing kidney with a donor kidney
<b>History of smoke of inhalation</b>	Injury due to inhalation or exposure to hot gaseous products combustion
<b>History of submersion</b>	Submersion is the process of experiencing respiratory impairment from immersion in liquid
<b>Hoarseness</b>	An unnatural condition marked by a deep or rough, harsh, grating voice, indicating an inflammation of the throat and larynx
<b>Hot joint</b>	Any warmth around a joint, may be red also. Joint pain and swelling are common manifestations of many musculoskeletal and rheumatologic diseases. As a result, the differential diagnosis of childhood joint pain and swelling is large and includes both benign and serious conditions
<b>Hyperglycaemia</b>	A higher than normal glucose level (normal glucose levels 3.5-5.5mmols/litre). May be a sign that the body has experienced a stressful episode, may be medication induced or indicate the presence of Diabetes Mellitus
<b>Hypertension</b>	Blood pressure sustained above the accepted normal level for age (see Appendix 1.1)
<b>Hyphaema</b>	Bleeding into the anterior chamber of the eye
<b>Hypoglycaemia</b>	A lower than normal glucose level (normal glucose levels 3.5-5.5mmols/litre). Abnormally low levels of glucose in the blood, leading to muscular weakness, confusion, sweating and, in severe cases, coma or seizures
<b>Hypotension</b>	A low systolic blood pressure for age
<b>Idiopathic Purpura (ITP) thrombocytopenic</b>	Also known as primary immune thrombocytopenic purpura and autoimmune thrombocytopenic purpura, is defined as isolated low platelet count (thrombocytopenia) with normal bone marrow and the absence of other causes of thrombocytopenia
<b>Inadequate breathing</b>	Patients who are failing to breathe effectively enough to maintain adequate oxygenation have inadequate breathing. Please see Respiratory Distress
<b>Inadequate circulation</b>	Hypovolaemic shock is defined as inadequate circulation of blood through one or more organs or structures of the body. Shock occurs when there is inadequate tissue perfusion: <ul style="list-style-type: none"> <li>• Inadequate amounts of nutrients (especially oxygen) are delivered to the tissues</li> <li>• Inadequate removal of waste products away from the tissues</li> </ul>

<b>Inconsolable by parents</b>	Children/infants whose crying does not respond to parents attempts to console them
<b>Increased work of breathing</b>	See Respiratory Distress
<b>Infant</b>	A child during the first year of life
<b>Inflammation</b>	A series of changes in the tissues indicating their reaction to injury, whether mechanical, chemical or infectious. The signs of inflammation are heat, swelling, pain, redness and loss of function
<b>Ingestion</b>	The process of taking a material (e.g. foodstuff) into the mouth or body
<b>Ingestion of unknown substance</b>	The process of taking an unknown substance into the mouth or body. If the substance is unknown, it should always be treated as a substance of high toxicity
<b>Inguinal hernia</b>	Protrusion of the intestine through the inguinal canal. It may be reducible, irreducible or strangulated
<b>Inguinal swelling</b>	Swelling in the groin
<b>Intentional self-harm</b>	The term 'deliberate self-harm' or 'intentional self-harm' is used to describe intentional destruction of body tissue. It is important to recognise that a percentage of persons who self-harm eventually do attempt suicide
<b>Intercostal recession</b>	Intercostal recession is retraction of the chest wall in between the ribs (intercostal spaces). See respiratory distress
<b>Intermittent vomiting</b>	Vomiting that is sporadic in nature
<b>Jaundice</b>	Jaundice is yellow discolouration of the skin, sclera, and mucosa due to an increase in serum bilirubin. It is not a disease but rather a sign that can occur in many different diseases.
<b>Kussmaul breathing</b>	Deep rapid sighing respirations associated with metabolic acidosis. Usually associated with diabetic ketoacidosis (DKA)
<b>Laceration</b>	A torn or jagged wound
<b>Lethality</b>	The potential of a substance to cause illness or death. Seek advice from the poisons centre to establish this. If in doubt assume high risk
<b>Lethargy</b>	A condition of drowsiness, apathy, indifference or sluggishness that cannot be overcome at will
<b>Limp</b>	Inability to carry the full weight of the body through one or both lower limbs. This may be because of pain, infection or loss of function
<b>Listless</b>	Lacking energy or disinclined to exert effort; having no energy and enthusiasm and unwilling to do anything needing effort

<b>Local infection</b>	Local infection usually manifests as inflammation confined to a particular area or site on the body. However, localised infections can be serious if they are internal, such as in the appendix (appendicitis) or in the heart (endocarditis)
<b>Local inflammation</b>	Inflammation is the protective response of the body tissues to irritation or injury and may be classed as acute or chronic. Inflammation is characterised by the following quintet: redness, heat, swelling, pain and dysfunction of the organs involved, confined to a particular site or area
<b>Local tenderness</b>	Tenderness confined to a particular area or site
<b>Localised signs of allergic reaction</b>	See allergic reaction
<b>Marked-moderate accessory muscle use</b>	The use of accessory muscles during respiration, it may also include head-bobbing in the smaller infant. These muscles are not used in normal respiration, the more muscle involvement the more severe the respiratory distress
<b>Mastoid process</b>	The projecting portion of the temporal bone behind the ear
<b>Melaena</b>	The passage of black tar-like stools that contain altered blood
<b>Mild itch</b>	An itch that is intense but bearable
<b>Minor chest injury</b>	Any injury to the area below the clavicles and above the level of the lowest rib that does not cause major damage. As any chest injury can cause significant damage to the underlying organs with or without obvious external signs of trauma the diagnosis of a minor chest trauma is a diagnosis of exclusion
<b>Nasal flaring</b>	Nasal flaring is the enlargement of the opening of the nostrils during breathing. It is a sign of severe respiratory distress
<b>Neurovascular compromise</b>	Symptoms of reduced mobility, pallor, coldness, altered sensation and pain of the limb. May occur singularly or in combination +/- absent pulses distal to the injury
<b>New neurological symptoms</b>	Sudden onset of confusion, weakness / irritability or drowsiness. Symptoms may also include altered Glasgow Coma Scale, loss of sensation, weakness of the limbs or alterations in bladder or bowel function
<b>Non-blanching rash</b>	It does not disappear on applying pressure. This rash should be considered as an emergency in triage and should never receive less than a triage category 2
<b>Not responding to parents</b>	Infant/child is not responding to attempts by parents to interact with the child
<b>Occipital</b>	Relating to the back of the head



<b>Oedema</b>	Oedema is an abnormal accumulation of fluid in the tissues. It is clinically shown as swelling
<b>Off form</b>	Child is behaving in a manner unusual for him/her. Parents may report many unusual behaviours e.g. increased irritability, increased restlessness, sleeping more than usual, not feeding as normal
<b>Oliguria</b>	A decrease in the amount of urine produced by the kidneys
<b>Open (compound) fracture</b>	All wounds in the vicinity of a fracture should be regarded with suspicion. If there is any possibility of communication between the wound and the fracture, then the fracture should be assumed to be open
<b>Open wound</b>	Open wounds can be classified according to the object that caused the wound. Types of open wound include: incised wounds, lacerations, abrasions, avulsions, puncture wounds, penetration wounds and / or gunshot wounds
<b>Pain</b>	<p>An unpleasant sensation ranging from mild discomfort to agonised distress</p> <ul style="list-style-type: none"> <li>• <b>Severe:</b> Pain that is unbearable, often described as the worst ever; 7-10 (out of 10) on a validated pain score tool (e.g. Wong Baker pain scale/Pain ruler/FLACC Pain Scale pain score tools)</li> <li>• <b>Moderate:</b> Pain is bearable but intense; 4-6/10 on a validated pain score tool (e.g. Wong Baker pain scale/Pain ruler/FLACC Scale pain score tools)</li> <li>• <b>Mild:</b> Mild stinging causes few problems, can do most things; 1-3/10 on a validated pain score tool (e.g. Wong Baker pain score/Pain ruler/FLACC Scale pain score tools)</li> </ul>
<b>Paraphimosis</b>	Retraction of the foreskin behind the glans penis and cannot be reduced
<b>Paraesthesia</b>	Abnormal sensation such as burning or tingling due to a disorder of the sensory nervous system
<b>Parietal lobe</b>	The parietal lobe is a part of the brain positioned above (superior to) the occipital lobe and behind (posterior to) the frontal lobe
<b>Penetrating eye trauma</b>	A recent traumatic event involving penetration of the globe of the eye
<b>Penetrating trauma</b>	A traumatic event which involves the penetration of any part of the body by knife or other object. As any penetrating injury can cause significant damage to the underlying organs with or without obvious external signs of significant trauma, the diagnosis of a minor penetrating wound is a diagnosis of exclusion. No penetrating wound is considered a minor injury in triage

<b>Penile discharge</b>	Emission of material from the penis, can be pus or fluid
<b>Peri-orbital swelling</b>	Painful swelling of upper and lower eyelid
<b>Persistent diarrhoea</b>	Diarrhoea that is continuous or that occurs without respite
<b>Persistent vomiting</b>	Vomiting that is continuous or that occurs without any respite
<b>Petechiae</b>	Pinpoint, flat round red spots under the skin surface caused by intradermal hemorrhage. They do not blanch when pressure is applied. This rash should be considered as an emergency in triage and should never receive less than a triage category 2
<b>Pleuritic pain</b>	A sharp pain in the chest, worse on breathing, coughing or sneezing
<b>Post-tonsillectomy</b>	Following the surgical removal of the tonsils
<b>Post-tonsillectomy bleed</b>	Patient vomits or spits up blood post tonsillectomy
<b>Priapism</b>	Sustained penile erection
<b>Probable risk of harm to self</b>	Patients, who have a significant history of self-harm, are actually trying to harm themselves or who are actively trying to leave with the intent of harming themselves
<b>Projectile vomiting</b>	Forcible ejection of contents of stomach through the mouth
<b>Purpura</b>	A purplish bruise that does not blanch on applying the pressure. This rash should be considered as an emergency in triage and should never receive less than a triage category 2
<b>Purulent discharge</b>	A discharge that contains pus
<b>Pyrexia</b>	Elevation of the body temperature above normal
<b>Recent problem</b>	For the purpose of the Irish Children's Triage System: a problem that has occurred within the last 48 hours
<b>Recession</b>	Recession is a clinical sign of respiratory distress which occurs as increasingly negative intra-thoracic pressures cause in drawing of part of the chest
<b>Red currant stools</b>	A dark red stool (stool mixed with blood and mucus) classically seen in intussusception)
<b>Reduced feeding</b>	Infants/children who are taking less than their normal amount of diet (food or liquids)
<b>Reduced weight-bearing</b>	Difficulty in putting pressure onto affected limb
<b>Respiratory arrest</b>	The absence or cessation of breathing
<b>Respiratory distress</b>	<p><b>Severe Respiratory Distress</b></p> <ul style="list-style-type: none"> <li>• Stridor at rest</li> <li>• Severe increase in work of breathing</li> <li>• Sighing / grunting respirations</li> <li>• Nasal flaring</li> <li>• Unable to talk in sentences/ single words only</li> </ul>

	<ul style="list-style-type: none"> <li>• Marked limitation of ability to talk</li> <li>• Agitated/Distressed</li> <li>• Moderate – marked accessory muscle use/recession</li> <li>• Tachycardia</li> <li>• Subtle or no accessory muscle use/recession</li> <li>• O<sub>2</sub> saturation &lt; 92%</li> <li>• PEFR &lt; 40%</li> </ul> <p><b>Moderate Respiratory Distress</b></p> <ul style="list-style-type: none"> <li>• Tracheal tug, intercostal / subcostal recession, nasal flaring, chest pain</li> <li>• Mild stridor</li> <li>• Constant cough – appears distressed</li> <li>• Normal mental state</li> <li>• Some accessory muscle use/recession</li> <li>• O<sub>2</sub> saturation 92-94% in air</li> <li>• Tachycardia</li> <li>• Some limitation of ability to talk</li> <li>• PEFR 40-70%</li> </ul> <p><b>Mild Respiratory Distress</b></p> <ul style="list-style-type: none"> <li>• Normal mental state</li> <li>• Subtle or no accessory muscle use/recession</li> <li>• O<sub>2</sub> saturation &gt; 94% (may be normal even in severe asthma)</li> <li>• Able to talk normally</li> <li>• PEFR &gt; 70%</li> </ul>
<b>Respiratory failure</b>	Respiratory efforts are insufficient to maintain adequate gaseous exchange
<b>Retention of urine</b>	Inability to pass urine with bladder distension
<b>Rigors</b>	An attack of shivering that occurs when the heat-regulating centre malfunctions. There is a rapid increase in body temperature which remains elevated until profuse sweating takes place
<b>Risk of harm to others</b>	The potential of the patient to actively attempt to harm others. This may be assessed by considering the state of mind, body posture and behaviour. If in doubt, assume a high risk
<b>Risk of self-harm</b>	Patients who have a significant history of self-harm, are actually trying to harm themselves or have the intent of harming themselves
<b>Scald</b>	The act of burning with steam or hot water
<b>Scrotal swelling</b>	Scrotal swelling is abnormal enlargement of the scrotum, the sac surrounding the testicles
<b>Scrotal trauma</b>	A traumatic event involving the scrotum
<b>Severe allergic reaction</b>	See anaphylaxis

<b>Severe blood loss</b>	Involves loss of 30-40% of circulating volume, with resulting changes in heart rate, blood pressure, capillary refill time, and altered mental status. Patient is demonstrating signs of hypovolaemic shock and requires fluid resuscitation
<b>Severe itch</b>	An itch (otherwise known as ‘Pruritus’) that is unbearable with no periods of relief for the patient
<b>Shock</b>	Acute circulatory disturbance leading to cellular hypoxia through inadequate tissue perfusion. Shock can be hypovolaemic, cardiogenic or distributive
<b>Sickle Cell Disease</b>	Sickle-cell disease (SCD) is a hereditary blood disorder characterised by abnormal, rigid, ‘sickle’ shaped haemoglobin. ‘Sickling’ decreases the cells’ flexibility and can result in various life-threatening complications
<b>Significant history</b>	Any pre-existing medical or surgical condition that carries a significant morbidity
<b>Signs of inhalation injury</b>	Smoke inhalation should be assumed if the patient has been confined in a smoke filled space. Physical signs such as oral or nasal soot are less reliable but significant if present
<b>Signs of meningism</b>	Meningeal irritation and inflammation that leads to the triad of headache, photophobia and neck stiffness
<b>Submersion</b>	Submersion is the process of experiencing respiratory impairment from submersion in liquid and is otherwise known as drowning
<b>Sudden loss of vision</b>	Sudden visual loss is a common complaint with variable presentations among patients of different ages. Some patients describe their symptoms as a gradually descending gray-black curtain or as blurring, fogging, or dimming of vision. Symptoms usually last a few minutes but can persist for hours. Variation in frequency ranges from a single episode to many episodes per day; recurrences may continue for years but more frequently occur over seconds to hours
<b>Sudden onset</b>	Happens quickly and unexpectedly. Sudden onset timelines vary depending on the organ/system affected
<b>Suicidal ideation</b>	Suicidal ideation is a medical term for thoughts about or an unusual preoccupation with suicide. The range of suicidal ideation may vary from fleeting to detailed preparation, role planning and unsuccessful attempts (which may be intentionally designed to fail) or may be fully intended to result in death

<b>Swelling</b>	Swelling is the enlargement of organs, skin, or other body parts. It is caused by an accumulation of fluid in the tissues. The extra fluid can lead to a rapid increase in weight over a short period of time (days to weeks). Swelling can occur all over the body (generalised) or only in one part of the body (localised)
<b>Syncope episode</b>	Fainting episode
<b>Tachycardia</b>	A pulse rate that is above normal for age (see Vital Signs Reference Grid)
<b>Temporal</b>	Temporal bone in the skull or temporal lobe of the brain
<b>Testicular pain</b>	Pain in the testes. May be acute or chronic
<b>Toxbase</b>	Online database of the National Poisons Information Service (UK)
<b>Toxicity</b>	<p>Toxicity is the level of harm a toxin/substance can cause. Toxicity may result when the dose is too high, or it may result when the liver or kidneys are unable to remove the drug from the bloodstream. Many commonly prescribed medications can accumulate in the bloodstream and result in toxicity. Toxicity is defined in terms of high, moderate or low toxicity</p> <ul style="list-style-type: none"> <li>• <b>Substance of high toxicity:</b> There is a potential for the substance to cause serious illness and or death. Advice from the National Poisons Information Centre or 'Toxbase' should be sought immediately to determine the level of risk and recommended assessment and treatment. If in doubt treat the patient as if it was a substance of high toxicity</li> <li>• <b>Substance of moderate toxicity:</b> There is a potential for the substance to cause serious illness and or death. Advice from the National Poisons Information Centre or 'Toxbase' should be sought immediately to determine the level of risk and recommended assessment and treatment</li> <li>• <b>Substance of low toxicity:</b> Substance that carries no side effects/ risk to the patient Advice from the National Poisons Information Centre or 'Toxbase' should be sought immediately to determine the level of risk and recommended assessment and treatment</li> </ul>
<b>Traumatic amputation</b>	<p><b>Complete:</b> A complete traumatic amputation is the accidental severing of a limb or appendage from the rest of the body</p> <p><b>&gt; 50% partial:</b> Some structure, such as a muscle, ligament, or tendon is still intact between the body and the amputated part</p>

<b>Unable to talk in sentences</b>	A child who is so breathless that they are unable to complete relatively short sentences in one breath
<b>Unable to weight-bear</b>	Cannot put any pressure onto the affected limb
<b>Uncontrollable haemoptysis</b>	Continued coughing up of large amounts of blood despite medical/surgical intervention
<b>Uncontrollable minor haemorrhage</b>	A haemorrhage that is not rapidly controlled by the application of direct pressure
<b>Unexplained bruising</b>	The bruising is not explained by the patients history of injury
<b>Unresponsive</b>	A temporary or prolonged loss of awareness of self and of surroundings
<b>Urinalysis</b>	Analysis of urine using reagent testing strips
<b>Urine retention</b>	The inability to completely empty urine from the bladder with urination
<b>Violent behaviour</b>	As intentional physically aggressive behaviour against another person
<b>Visual acuity</b>	A clarity or clearness of vision. A measure of how well a person sees. The ability to distinguish details of shapes or objects
<b>Visual hallucinations</b>	A hallucination is a perception in the absence of apparent stimulus that has qualities of real perception. A visual hallucination is the 'seeing of things that are not there' which can also include 'seeing things that are there incorrectly'
<b>Ventriculo-peritoneal (VP) Shunt</b>	This is a device which drains the extra fluid in the brain into the peritoneal cavity where the fluid can be absorbed. If this VP shunt becomes detached blocked or infected, it can lead to raised intracranial pressure
<b>Widespread</b>	Found or distributed over a large area or number of people

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# **Appendix 1**

## **1.1 Vital Signs Reference Grid(s)**

## **1.2 Levels of Dehydration**

## **1.3 Major Trauma Guidelines**

## **1.4 Levels of Respiratory Distress**



## 1.1 Vital Signs Reference Grids (Adapted from Warren, *et al* 2008)

### Heart Rate Values

**Table 5.1**

Age	≤ - 2 SD	- 1 SD	Normal	+ 1 SD	+ 2 SD	> + 2 SD
0 – 3 months	< 65	65 – 89	90 – 179	180 – 204	205 - 230	> 230
4 – 6 months	< 63	63 – 89	90 – 159	160 – 179	180 – 210	> 210
7 -12 months	< 60	60 – 79	80 - 139	140 – 159	160 - 180	> 180
1 – 3 years	< 58	58 – 74	75 – 129	130 – 144	145 – 165	> 165
4 – 6 years	< 55	55 – 69	70 – 109	110 – 124	125 - 140	> 140
≥ 7 years	< 45	45 – 59	60 – 89	90 – 104	105 – 120	> 120

SD: standard deviation

### Respiratory Rate Values

**Table 5.2**

Age	≤ - 2 SD	- 1 SD	Normal	+ 1 SD	+ 2 SD	> + 2 SD
0 – 3 months	< 20	20 – 30	31 - 60	61 – 70	71 – 80	> 80
4 – 6 months	< 20	20 – 30	31 – 60	61 – 70	71 – 80	> 80
7 -12 months	< 17	17 – 25	26 – 45	46 – 55	56 – 60	> 60
1 – 3 years	< 15	15 – 20	21 – 30	31 – 35	36 – 40	> 40
4 – 6 years	< 12	12 – 16	17 – 24	25 – 28	29 – 32	> 32
≥ 7 years	< 10	10 – 13	14 – 20	21– 24	25 – 26	> 26

SD: standard deviation

### Vital Signs Reference Grids (adapted from Warren *et al* 2008)

Colour	Triage Category
Red	Triage Category 1
Orange	Triage Category 2
Yellow	Triage Category 3
White	Triage category not determined by pulse or respiratory rate

**Table 3 Classification of significant hypertension and hypotension by age group**

<b>Age group</b>	<b>Significant Hypertension (mm Hg)</b>	<b>Severe Hypertension / Hypotension (mm Hg)</b>
Neonate (< 7 days)	Systolic BP ≥ 96	Systolic BP ≥ 106 Systolic BP < 70
Neonate (8 – 30 days)	Systolic BP ≥ 104	Systolic BP ≥ 110 Systolic BP < 70
Infant (< 2 years)	Systolic BP ≥ 112 Diastolic BP ≥ 74	Systolic BP ≥ 118 Diastolic BP ≥ 82 Systolic BP < 75
Children (2 – 5 years)	Systolic BP ≥ 116 Diastolic BP ≥ 76	Systolic BP ≥ 124 Diastolic BP ≥ 84 Systolic BP < 80
Children (6 – 9 years)	Systolic BP ≥ 122 Diastolic BP ≥ 78	Systolic BP ≥ 130 Diastolic BP ≥ 86 Systolic BP < 90
Children (10 – 12 years)	Systolic BP ≥ 126 Diastolic BP ≥ 82	Systolic BP ≥ 134 Diastolic BP ≥ 90 Systolic BP < 90
Adolescents (13 – 15 years)	Systolic BP ≥ 136 Diastolic BP ≥ 86	Systolic BP ≥ 144 Diastolic BP ≥ 92 Systolic BP < 100

<b>Colour</b>	<b>Triage Category</b>
<b>Red</b>	<b>Triage Category 1</b>
<b>Orange</b>	<b>Triage Category 2</b>
<b>Yellow</b>	<b>Triage Category 3</b>

## Notes

- SD = standard deviation
- Children with a heart or respiratory rate less than or equal to minus two standard deviations ( $\leq - 2$  s/d) from the normal range should never be triaged less than **category 1 (red)** even in the absence of any other clinical indicator.
- Children with a heart or respiratory rate greater than plus two standard deviations ( $> + 2$  s/d) from the normal range should never be triaged less than **category 2 (orange)** even in the absence of any other clinical indicator.
- Children less than one year with a heart rate of minus one standard deviation ( $- 1$  s/d) from the normal range should never be triaged less than **category 1 (red)** even in the absence of any other clinical indicator.
- Children greater than 1 year with a heart rate of minus one standard deviation ( $- 1$  s/d) from the normal range should never be triaged less than **category 2 (orange)** even in the absence of any other clinical indicator.
- Children with a respiratory rate of minus one standard deviation ( $- 1$  s/d) from the normal range should never be triaged less than **category 3 (yellow)** even in the absence of any other clinical indicator.
- Children with a heart or respiratory rate plus two standard deviations ( $+ 2$  s/d) from the normal range should never be triaged less than **category 3 (yellow)** even in the absence of any other clinical indicator.
- In children with renal conditions, severe hypertension should never be triaged less than **category 2 (orange)** even in the absence of any other clinical indicator.
- In children with renal conditions, significant hypertension should never be triaged less than **category 3 (yellow)** even in the absence of any other clinical indicator.

## 1.2 Levels of Dehydration

### Severe Dehydration

- >10% loss of body weight
- Poor peripheral perfusion with prolonged capillary refill time
- Cool peripheries
- Low blood pressure
- Anuria
- Lethargic to comatose

### Moderate Dehydration

- > 5% loss of body weight
- Tachycardia (Appendix 1.1)
- Poor tear production
- Decreased skin turgor
- Sunken eyes
- Sunken / bulging fontanelle
- Oliguria
- Restless to lethargic

### Mild Dehydration

- 5% loss of body weight
- Slightly dry mucous membranes
- Slightly decreased urine output
- Increased thirst
- Irritable

## 1.3 Major Trauma Guidelines

### Any child with any of the following:

- A mechanism of injury that may indicate high risk:
  - Pedestrian / cyclist hit > 30km/hr.
  - Passenger - collision > 60km/hr.
  - Fall from significant height
  - More than twice the child's height and / or fall onto an unyielding surface
  - Kick / fall from a horse
  - Rolled over by a vehicle
  - Ejected from vehicle
  - Thrown over handlebars of bike
  - Fall down flight of stairs
- Death of other victim(s) of the incident
- Unrestrained passenger
- History of submersion
- Multiple trauma
- Significant injury above clavicles
- Trauma & unexplained hypotension
- History of neck trauma / spinal cord trauma
- Neurological deficit
- Other major injuries (e.g. fractured limbs in 2 or more body regions, abdominal injury, pelvic injury, back, femur)
- Penetrating injury to chest, head, neck, abdomen, groin or back
- Burns > 10% body surface
- Clear fluid leak from ear or nose
- New neurological symptoms
  - Sudden onset of confusion, weakness / irritability or drowsiness

### Physical findings:

- Airway obstruction
- Shallow breathing
- Cyanosis
- Signs of significant shock
- Altered Glasgow Coma Scale

## 1.4 Levels of Respiratory Distress

### Severe Respiratory Distress

- Stridor at rest
- Severe increase in work of breathing
- Sighing / grunting respirations
- Nasal flaring
- Unable to talk in sentences / single words only
- Marked limitation of ability to talk
- Agitated / Distressed
- Minimal respiratory effort
- Moderate – marked accessory muscle use / recession
- Tachycardia
- Head bobbing in the infant
- O<sub>2</sub> saturation < 92%

### Moderate Respiratory Distress

- Tracheal tug, intercostal / subcostal recession, nasal flaring, chest pain
- Mild stridor
- Constant cough – appears distressed
- Normal mental state
- Some accessory muscle use / recession
- O<sub>2</sub> saturation 92-94% in air
- Tachycardia
- Some limitation of ability to talk

### Mild Respiratory Distress

- Normal mental state
- Subtle or no accessory muscle use / recession
- O<sub>2</sub> saturation > 94% (may be normal even in severe asthma)
- Able to talk normally

## Appendix 2

### Audit Tool

ICTS recommends using the Manchester Triage System Audit Tool

Criteria	Yes	No	Comment
Correct use of presentational flow chart			
Specific discriminators correctly selected			<i>(record as seen on triage record)</i>
Pain score recorded			
Correct triage category assigned (based on patient presentation & discriminators)			
Demonstrated ability to navigate the computerised triage system			<i>(where applicable)</i>
Triage score legible & named			
Re-triaged where necessary			

**(Manchester Triage System, 2014)**

## Appendix 3

### Acknowledgements

The National Emergency Medicine Programme (EMP) acknowledges the assistance of the EMP Working Group, Emergency Nursing Interest Group (ENIG), the ICTS Project Subgroup and the ICTS Steering Group in the development of this tool and would like to thank especially the Emergency Department (ED) teams in the six hospitals who participated in the pilot phase of the project.

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#### ICTS Steering Group (2013)

In January 2013, at the request of Dr Una Geary, Clinical Lead EMP, a steering group was convened comprising the members of the ICTS project subgroup, additional experts and key stakeholders to further assist and develop the work already undertaken by the project subgroup. The following members are acknowledged for their contribution,

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