**Executive Summary: Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) Guidelines 2016**

**BACKGROUND**

Following its introduction in 1999,1 the CTAS added Paediatric CTAS in 2001,2 revised Adult CTAS in 2004 to include and align with the Canadian Emergency Department Information System (CEDIS) presenting complaint list,3 and developed and defined a set of primary or first order modifiers and a number of complaint specific special or second order modifiers.4 In 2008 the CEDIS complaint list, Adult CTAS and Paediatric CTAS were all updated and aligned.5,6,7 In 2012 a minor revision was published8 and in 2016 an extensive 4-year review has been undertaken.

**METHODS**

The CTAS National Working Group reviews and revises CTAS every four years based on feedback from multiple sources including nurses, physicians, educators, National Ambulatory Care Reporting System (NACRS) and the public. To respond to the triage challenges of our aging population representatives of the CAEP Geriatric Emergency Medicine Committee were engaged. Collaboration with the Society of Obstetricians and Gynaecologists of Canada while they developed the Obstetrical Triage Acuity Scale (OTAS) also prompted several CTAS updates.

***Updated focus areas***

1. **CTAS time targets**

There will be no change to time targets as each acuity level is designed to be ‘sensitive’ enough to capture those patients who from a safety and quality of care standpoint should be seen within the recommended time period. It is recognized that this will include patients who later rule out of the more serious conditions, however, rather over than under triage.

Fractile response times, as introduced in 1999, should be replaced by time series benchmarking by individual site and comparisons by hospital type, and in line with the 2013 CAEP position statement on ED overcrowding and access block.9

1. **CTAS as a diversion tool**

CTAS was developed as a tool to prioritize ED patients based on presenting acuity and risk. It was not designed as a tool to identify patients who can be safely diverted from the ED. Studies that have reviewed the use of CTAS for this purpose have noted this practice to be unsafe and leading to inappropriate refusal of care for patients requiring hospital treatment. Admission rates for CTAS level 4 patients range from 3-10% and from 1-4% for CTAS level 5 patients.

1. **CEDIS complaint updates**

Following review, 5 previous complaints had their names altered, two changed CEDIS Presenting Complaint categories and 3 new complaints were added.

The new complaints are: Heat related issue (Environmental); Post partum issue (Obstetrical-Gynaecological); and Return visit for therapy (General and Minor). Bilateral leg swelling was changed to Leg swelling / edema (Cardiovascular); the 2 Major trauma complaints were changed to ‘Multisystem trauma’ - blunt and – penetrating (Trauma) 2 others changes were to Imaging test / blood test and Abnormal lab / imaging results (General and Minor)

The NACRS CEDIS Presenting Complaint List (V5.0) that contains these changes and can be accessed at <http://caep.ca/resources/ctas/cedis>.

1. **Heat related issue**

Several of our international partners had added this complaint previously. With 2016 being the hottest year on record and climate change unlikely to be mitigated any time soon, this complaint has been added. The CTAS acuity will range from 1 to 4 and in addition to relevant 1st order modifiers and dehydration modifiers, 4 special modifiers are included. Core temperature greater than 41° C is CTAS level 1; Core temperature 39-41° C is CTAS level 2; Ongoing heat cramps is CTAS level 4; and Heat cramps resolving, well hydrated is CTAS level 4.

1. **Obstetrical / Gynaecological revisions**

It was recognized that for a number of Pregnancy issues > 20 weeks, the OTAS special modifiers were either better worded or missing altogether from CTAS. Three of the pregnancy trauma modifiers were also added to the CEDIS trauma complaints. Another key contribution from this work was the addition of a new Postpartum issues presenting complaint to address the concerns of the postpartum period.

1. **New frailty modifier**

Anyone working in a crowded ED recognizes certain groups are at risk for prolonged wait times. These include: the frail elderly, those who are physically disabled, cognitively challenged, or homeless, especially if unaccompanied. The introduction of a CTAS level 3 ‘frailty modifier’ will allow triage nurses to up-triage such patients normally rated as a CTAS level 4 or 5.

*Frailty modifier definition:* Any patient completely dependent for personal care; who is wheelchair bound; suffers from cognitive impairment that limits their awareness of their surroundings or ability to appreciate time; is in the late course of a terminal illness; is showing signs of cachexia and general weakness; or is over 80 years of age unless obviously physically and mentally robust.

1. **Geriatric triage considerations**

The baby boomer ager group is our fastest growing population demographic expected to reach 20% of the population by 2030. There has been a parallel rise in ED visits by patients over the age of 65. A number of factors contribute to challenges in being able to assign an appropriate triage acuity score. The educational focus is on 3 key areas:

1. Homeostatic mechanisms change with aging make vital sign interpretation more difficult, including respirations, hemodynamics, and temperature.
2. Several factors complicate pain assessment, including changes in pain perception, an increased risk of persistent pain, and difficulty in assessing patients with cognitive impairment.
3. Domains of care requiring special consideration include:
   1. Atypical presentations of common diseases such as acute coronary syndromes without chest pain, sepsis without fever, or pneumonia without respiratory complaints.
   2. Cognitive impairment is extremely common and often unrecognized. Early recognition and communication by the triage nurse can expedite appropriate care.
   3. Falls and trauma mong the elderly continue to rise. Unlike younger patients, the reason for falling is often linked with weakness, impaired mobility, medications, or balance issues. Recognizing hemodynamic compromise and the risk of serious injury is very important in this patient group.
   4. Polypharmacy is a major challenge with approximately 50% of US men and women over the age of 65 taking more than 5 medications. Adverse drug events account for up to 10% of elderly ED visits.

*Guidance when Applying the Canadian Triage and Acuity Scale (CTAS) to the Geriatric Patient* and its accompanying executive summary can be found at <https://doi.org/10.1017/cem.2017.363>.

1. **Paediatric updates**

The fever modifier in paediatrics was adopted to capture the vulnerable population for sepsis in childhood. The fever modifier for newborns due to their relative immunodeficiency remains CTAS 2. There has been a significant change in the incidence of serious infections in young children in relation to the greatly expanded immunization programs across the country. In recognition of the changing patterns of childhood infections, the fever modifier ‘temperature greater than 38.5°C looks unwell’ CTAS level 2 and ‘temperature greater than 38.5°C looks well’ CTAS level 3 will be limited to children 3 – 18 months, rather than the previous 3 – 36 months.

1. *Prehospital CTAS*

Paramedics have variably applied CTAS in the field since 2004. Research has shown moderate to good interrater reliability between EMS providers and triage nurses. Recent work has shown CTAS to be an effective additional tool to assist in destination decision making, and provide an evidence-based rationale for system-wide pre-hospital resource allocation, when combined with dispatch information. Until now, Pre-CTAS education and implementation has been highly variable across the country. This year the Paramedic Chiefs of Canada (PCC) have joined the CTAS NWG with the goal of a combined mission to “advance and align paramedic leadership” across the country with a common understanding of the role of Pre-CTAS and a common education approach.

1. **Planned CTAS educational changes**

To support the delivery of the didactic educational component of CTAS education an online course is being developed. The content will still include basic triage education as well as the Adult and Paediatric overviews, modifier definitions, and how to apply the CTAS. Additional materials will include explanations and sample cases for each CEDIS complaint within the 17 groups along with a series of questions for each section. The other major addition is new geriatric triage educational support.

Upon successful completion of the didactic work, there will be a final face-to-face session with a CTAS Instructor either in a classroom or via distance technology (videoconference/webinar) to include some additional materials and focus on more complex cases to engage discussion and challenge student understanding. Upon completion and final payment, candidates will receive a certificate of successful completion of CTAS training.

**SUMMARY**

While the goal of emergency care providers is always to provide timely access to care, high patient volumes, frequent surges in ED arrivals and system capacity limitations, especially after hours, mean that waits are inevitable. To help provide patient safety and access equity CTAS was developed to assist triage personnel to prioritize patients based on acuity and risk, not to divert patients away. Based on national and international collaborations, 3 new CEDIS complaints have been added along with new modifiers. To better protect our more vulnerable patients a new CTAS level 3 frailty modifier has been introduced. To better address the triage challenges of older patients, new geriatric educational materials have been developed. Heightened concerns for serious infections in young children have lessened with vaccinations decreasing the moderate risk age group to 3-18 months.

In addition, the focus has been on revising the educational materials and welcoming the addition of representation from the Paramedic Chiefs of Canada to the CTAS NWG. An online CTAS educational course is being developed to take much of the didactic teaching out of the classroom and focus that time on more challenging case-based discussion to ensure a clear understanding and comfort level applying the CTAS.

**REFERENCES**

1. Beveridge R, Clark B, Janes L, et al. Canadian Emergency Department Triage and Acuity Scale: implementation guidelines. *CJEM* 1999;1(Suppl):S2-28.
2. Warren D. Jarvis A, Leblanc L, the National Triage Task Force members. Canadian Paediatric Triage and Acuity Scale: implementation guidelines for emergency departments. *CJEM* 2001;3(Suppl):S1-27.
3. Grafstein E, Unger B, Bullard M, et al. Canadian Emergency Department Information System (CEDIS) Presenting Complaint List (Version 1.0). *CJEM* 2003;5:27-34.
4. Murray M, Bullard M, Grafstein E. Revisions to the Canadian Emergency Department Triage and Acuity Scale implementation guidelines. *CJEM* 2004;6:421-7.
5. Grafstein E, Bullard MJ, Warren D, et al. The CTAS National Working Group. Revision of the Canadian Emergency Department Information System (CEDIS) presenting complaint list version 1.1. *CJEM* 2008;10:151-61.
6. Bullard MJ, Unger B, Spence J, and members of the CTAS National Working Group. Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) adult guidelines. *CJEM* 2008;10:136-42.
7. Warren DW, Jarvis A, LeBlanc L, and members of the CTAS National Working Group. Revisions to the Canadian Triage and Acuity Scale Paediatric Guidelines (PaedCTAS). *CJEM* 2008;10:224-32.
8. Bullard MJ, Chan T, Brayman C, and members of the CTAS National Working Group. Revisions to the Canadian emergency department triage and acuity scale (CTAS) guidelines. *CJEM* 2014;16(6):485-89.
9. Affleck A, Parks P, Drummond A, et al. Emergency Department overcrowding and access block. *CJEM* 2013;15(6):359-70.