

## **POISONING SEVERITY SCORE (PSS) IPCS/EAPCCT**

A standardized scale for grading the severity of poisoning allows qualitative evaluation of morbidity caused by poisoning, better identification of real risks and comparability of data. The PSS has been published externally.<sup>1</sup>

### **Instructions**

The PSS is a classification scheme for cases of poisoning in adults and children. This scheme should be used for the classification of acute poisonings regardless of the type and number of agents involved. However, modified schemes may eventually be required for certain poisonings and this scheme may then serve as a model.

The PSS should take into account the overall clinical course and be applied according to the most severe symptomatology (including both subjective symptoms and objective signs). Therefore it is normally a retrospective process, requiring follow-up of cases. If the grading is undertaken at any other time (e.g. on admission) this must be clearly stated when the data are presented.

The use of the score is simple. The occurrence of a particular symptom is checked against the chart and the severity grading assigned to a case is determined by the most severe symptom(s) or sign(s) observed.

Severity grading should take into account only the observed clinical symptoms and signs and it should not estimate risks or hazards on the basis of parameters such as amounts ingested or serum/plasma concentrations.

The signs and symptoms given in the scheme for each grade serve as examples to assist in grading severity.

Treatment measures employed are not graded themselves, but the type of symptomatic and/or supportive treatment applied (e.g. assisted ventilation, inotropic support, haemodialysis for renal failure) may indirectly help in the evaluation of severity. However, preventive use of antidotes should not influence the grading, but should instead be mentioned when the data are presented.

Although the scheme is, in principle, intended for grading of acute stages of poisoning, if disabling sequelae and disfigurement occur, they would justify a high severity grade and should be commented on when the data are presented. If a patient's past medical history is considered to influence the severity of poisoning this should also be commented on.

Severe cases resulting in death are graded separately in the score to allow a more accurate presentation of data (although it is understood that death is not a grade of severity but an outcome).

### **Severity Grades**

|               |  |
|---------------|--|
| NONE (0):     | No symptoms or signs related to poisoning            |
| MINOR (1):    | Mild, transient and spontaneously resolving symptoms |
| MODERATE (2): | Pronounced or prolonged symptoms                     |
| SEVERE (3):   | Severe or life-threatening symptoms                  |
| FATAL (4):    | Death  |

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<sup>1</sup> Persson H, Sjöberg G, Haines J, Pronczuk de Garbino J. Poisoning Severity Score: Grading of acute poisoning. *J Toxicology - Clinical Toxicology* (1998) 36:205-13.

| ORGAN                     | NONE                 | MINOR  | MODERATE   | SEVERE   | FATAL |
|---------------------------|----------------------|--|--|--|-------|
|                           | 0                    | 1  | 2  | 3  | 4     |
|                           | No symptoms or signs | Mild, transient and spontaneously resolving symptoms or signs  | Pronounced or prolonged symptoms or signs  | Severe or life-threatening symptoms or signs   | Death |
| <b>GI-tract</b>           |                      | <ul style="list-style-type: none"> <li>Vomiting, diarrhoea, pain</li> <li>Irritation, 1<sup>st</sup> degree burns, minimal ulcerations in the mouth</li> <li>Endoscopy: erythema, oedema</li> </ul>  | <ul style="list-style-type: none"> <li>Pronounced or prolonged vomiting, diarrhoea, pain, ileus</li> <li>1<sup>st</sup> degree burns of critical localization or 2<sup>nd</sup> and 3<sup>rd</sup> degree burns in restricted areas</li> <li>Dysphagia</li> <li>Endoscopy: ulcerative transmucosal lesions</li> </ul>  | <ul style="list-style-type: none"> <li>Massive haemorrhage, perforation</li> <li>More widespread 2<sup>nd</sup> and 3<sup>rd</sup> degree burns</li> <li>Severe dysphagia</li> <li>Endoscopy: ulcerative transmural lesions, circumferential lesions, perforation</li> </ul>   |       |
| <b>Respiratory system</b> |                      | <ul style="list-style-type: none"> <li>Irritation, coughing, breathlessness, mild dyspnoea, mild bronchospasm</li> <li>Chest X-ray: abnormal with minor or no symptoms</li> </ul>  | <ul style="list-style-type: none"> <li>Prolonged coughing, bronchospasm, dyspnoea, stridor, hypoxemia requiring extra oxygen</li> <li>Chest X-ray: abnormal with moderate symptoms</li> </ul>  | <ul style="list-style-type: none"> <li>Manifest respiratory insufficiency (due to e.g. severe bronchospasm, airway obstruction, glottal oedema, pulmonary oedema, ARDS, pneumonitis, pneumonia, pneumothorax)</li> <li>Chest X-ray: abnormal with severe symptoms</li> </ul>   |       |
| <b>Nervous system</b>     |                      | <ul style="list-style-type: none"> <li>Drowsiness, vertigo, tinnitus, ataxia</li> <li>Restlessness</li> <li>Mild extrapyramidal symptoms</li> <li>Mild cholinergic/anticholinergic symptoms</li> <li>Paraesthesia</li> <li>Mild visual or auditory disturbances</li> </ul> | <ul style="list-style-type: none"> <li>Unconsciousness with appropriate response to pain</li> <li>Brief apnoea, bradypnoea</li> <li>Confusion, agitation, hallucinations, delirium</li> <li>Infrequent, generalized or local seizures</li> <li>Pronounced extrapyramidal symptoms</li> <li>Pronounced cholinergic/anticholinergic symptoms</li> <li>Localized paralysis not affecting vital functions</li> <li>Visual and auditory disturbances</li> </ul> | <ul style="list-style-type: none"> <li>Deep coma with inappropriate response to pain or unresponsive to pain</li> <li>Respiratory depression with insufficiency</li> <li>Extreme agitation</li> <li>Frequent, generalized seizures, status epilepticus, opisthotonus</li> <li>Generalized paralysis or paralysis affecting vital functions</li> <li>Blindness, deafness</li> </ul> |       |

| ORGAN                         | NONE                 | MINOR   | MODERATE  | SEVERE  | FATAL |
|-------------------------------|----------------------|---|---|---|-------|
|                               | 0                    | 1   | 2   | 3   | 4     |
|                               | No symptoms or signs | Mild, transient and spontaneously resolving symptoms or signs   | Pronounced or prolonged symptoms or signs   | Severe or life-threatening symptoms or signs  | Death |
| <b>Cardio-vascular system</b> |                      | <ul style="list-style-type: none"> <li>Isolated extrasystoles</li> <li>Mild and transient hypo/hypertension</li> </ul>  | <ul style="list-style-type: none"> <li>Sinus bradycardia (HR ~40-50 in adults, 60-80 in infants and children, 80-90 in neonates)</li> <li>Sinus tachycardia (HR ~140-180 in adults, 160-190 in infants and children, 160-200 in neonates)</li> <li>Frequent extrasystoles, atrial fibrillation/flutter, AV-block I-II, prolonged QRS and QTc-time, repolarization abnormalities</li> <li>Myocardial ischaemia</li> <li>More pronounced hypo/hypertension</li> </ul> | <ul style="list-style-type: none"> <li>Severe sinus bradycardia (HR ~&lt;40 in adults, &lt;60 in infants and children, &lt;80 in neonates)</li> <li>Severe sinus tachycardia (HR ~&gt;180 in adults, &gt;190 in infants and children, &gt;200 in neonates)</li> <li>Life-threatening ventricular dysrhythmias, AV block III, asystole</li> <li>Myocardial infarction</li> <li>Shock, hypertensive crisis</li> </ul> |       |
| <b>Metabolic balance</b>      |                      | <ul style="list-style-type: none"> <li>Mild acid-base disturbances (HCO<sub>3</sub> ~15-20 or 30-40 mmol/l; pH~7.25-7.32 or 7.50-7.59)</li> <li>Mild electrolyte and fluid disturbances (K<sup>+</sup> 3.0-3.4 or 5.2-5.9 mmol/l)</li> <li>Mild hypoglycaemia (~50-70 mg/dl or 2.8-3.9 mmol/l in adults)</li> <li>Hyperthermia of short duration</li> </ul> | <ul style="list-style-type: none"> <li>More pronounced acid-base disturbances (HCO<sub>3</sub> ~10-14 or &gt;40 mmol/l; pH ~7.15-7.24 or 7.60-7.69)</li> <li>More pronounced electrolyte and fluid disturbances (K<sup>+</sup> 2.5-2.9 or 6.0-6.9 mmol/l)</li> <li>More pronounced hypoglycaemia (~30-50 mg/dl or 1.7-2.8 mmol/l in adults)</li> <li>Hyperthermia of longer duration</li> </ul>   | <ul style="list-style-type: none"> <li>Severe acid-base disturbances (HCO<sub>3</sub> ~&lt;10 mmol/l; pH ~&lt;7.15 or &gt;7.7)</li> <li>Severe electrolyte and fluid disturbances (K<sup>+</sup> &lt;2.5 or &gt;7.0 mmol/l)</li> <li>Severe hypoglycaemia (~&lt;30 mg/dl or 1.7 mmol/l in adults)</li> <li>Dangerous hypo- or hyperthermia</li> </ul>   |       |
| <b>Liver</b>                  |                      | <ul style="list-style-type: none"> <li>Minimal rise in serum enzymes (ASAT, ALAT ~2-5 x normal)</li> </ul>  | <ul style="list-style-type: none"> <li>Rise in serum enzymes (ASAT, ALAT ~5-50 x normal) but no diagnostic biochemical (e.g. ammonia, clotting factors) or clinical evidence of liver dysfunction</li> </ul>  | <ul style="list-style-type: none"> <li>Rise in serum enzymes (~&gt;50 x normal) or biochemical (e.g. ammonia, clotting factors) or clinical evidence of liver failure</li> </ul>  |       |
| <b>Kidney</b>                 |                      | <ul style="list-style-type: none"> <li>Minimal proteinuria/haematuria</li> </ul>  | <ul style="list-style-type: none"> <li>Massive proteinuria/haematuria</li> <li>Renal dysfunction (e.g. oliguria, polyuria, serum creatinine of ~200-500 µmol/l)</li> </ul>  | <ul style="list-style-type: none"> <li>Renal failure (e.g. anuria, serum creatinine of &gt;500 µmol/l)</li> </ul>   |       |

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|  | 0                    | 1  | 2  | 3   | 4     |
|  | No symptoms or signs | Mild, transient and spontaneously resolving symptoms or signs  | Pronounced or prolonged symptoms or signs  | Severe or life-threatening symptoms or signs  | Death |
| <b>Blood</b>                               |                      | <ul style="list-style-type: none"> <li>Mild haemolysis</li> <li>Mild methaemoglobinemia (metHb ~10-30%)</li> </ul>   | <ul style="list-style-type: none"> <li>Haemolysis</li> <li>More pronounced methaemoglobinemia (metHb ~30-50%)</li> <li>Coagulation disturbances without bleeding</li> <li>Anaemia, leukopenia, thrombocytopenia</li> </ul> | <ul style="list-style-type: none"> <li>Massive haemolysis</li> <li>Severe methaemoglobinemia (metHb &gt;50%)</li> <li>Coagulation disturbances with bleeding</li> <li>Severe anaemia, leukopenia, thrombocytopenia</li> </ul>                     |       |
| <b>Muscular system</b>                     |                      | <ul style="list-style-type: none"> <li>Mild pain, tenderness</li> <li>CPK ~250-1,500 iu/l</li> </ul>   | <ul style="list-style-type: none"> <li>Pain, rigidity, cramping and fasciculation</li> <li>Rhabdomyolysis, CPK ~1,500-10,000 iu/l</li> </ul>   | <ul style="list-style-type: none"> <li>Intense pain, extreme rigidity, extensive cramping and fasciculation</li> <li>Rhabdomyolysis with complications, CPK ~&gt;10,000 iu/l</li> <li>Compartment syndrome</li> </ul>                             |       |
| <b>Local effects on skin</b>               |                      | <ul style="list-style-type: none"> <li>Irritation, 1<sup>st</sup> degree burns (reddening) or 2<sup>nd</sup> degree burns in &lt;10% of body surface area</li> </ul> | <ul style="list-style-type: none"> <li>2<sup>nd</sup> degree burns in 10-50% of body surface (children: 10-30%) or 3<sup>rd</sup> degree burns in &lt;2% of body surface area</li> </ul>                                   | <ul style="list-style-type: none"> <li>2<sup>nd</sup> degree burns in &gt;50% of body surface (children: &gt;30%) or 3<sup>rd</sup> degree burns in &gt;2% of body surface area</li> </ul>  |       |
| <b>Local effects on eye</b>                |                      | <ul style="list-style-type: none"> <li>Irritation, redness, lacrimation, mild palpebral oedema</li> </ul>  | <ul style="list-style-type: none"> <li>Intense irritation, corneal abrasion</li> <li>Minor (punctate) corneal ulcers</li> </ul>  | <ul style="list-style-type: none"> <li>Corneal ulcers (other than punctate), perforation</li> <li>Permanent damage</li> </ul>   |       |
| <b>Local effects from bites and stings</b> |                      | <ul style="list-style-type: none"> <li>Local swelling, itching</li> <li>Mild pain</li> </ul>   | <ul style="list-style-type: none"> <li>Swelling involving the whole extremity, local necrosis</li> <li>Moderate pain</li> </ul>  | <ul style="list-style-type: none"> <li>Swelling involving the whole extremity and significant parts of adjacent area, more extensive necrosis</li> <li>Critical localization of swelling threatening the airways</li> <li>Extreme pain</li> </ul> |       |