SOP: SafeBoosC Treatment Guideline

Version	Author(s)	Date	Changes	Approved by
1.0	Simon Hyttel-Sørensen	29.05.12	Initial Version	Gorm Greisen

CONTENT

1.0 When to use the treatment guideline

When the 'burden alarm out of range' alerts the SafeBoosC software will request a clinical decision with an 'Event form'. The 'SafeBoosC Clinical Guidelines' should be available to help the decision.

Procedure

1. Press the 'Silence window' on the lower bar of the SafeBoosC software window. The alarm will now sound once every minute.
2. Consult with the attending doctor
3. Choose the intervention from the 'Action' drop-down list
4. Choose the appropriate description from the 'Details' drop-down list
5. Press 'OK' when the intervention is implemented, e.g., when the transfusion is beginning, when the FiO_2 is adjusted, or when the dopamin is actually entering the infant.
6. Manually type in the requested parameters as soon as possible.

The 'Action' drop-down list has all the possible interventions in the treatment guideline. Moreover it can be decided not to intervene, however that must be accompanied by a comment about reason.

The 'Silence window' will change the alarm to a single beep once every minute until the intervention is implemented and 'OK' is pressed. This cannot be silenced.

2.0 How to use the treatment guideline

The 'SafeBoosC Clinical Guidelines' provides guidance on how to influence the $rStO_2$. The list of possible interventions is not prioritized, thus it is recommended that all appropriate possible interventions are considered before a decision is reached.

3.0 SafeBoosC Clinical Guidelines

Assessment of cerebral oxygen saturation
Regional cerebral tissue oxygen saturation (rStO2) is a composite measure of tissue oxygen saturation across arterial, capillary, and venous beds and reflects a balance between cerebral oxygen delivery (CDO2) and cerebral metabolic rate (CMRO2). In preterm infants, the CMRO2 is unlikely to vary much and a change in rStO2 largely reflects changes in CDO2. The factors, which influence CDO2 are arterial oxygen saturation (SaO2), haemoglobin concentration ([Hb]), and cerebral blood flow (CBF).

Establishment of monitoring of cerebral oxygenation
As soon as possible and within 3 hours of age

Period of monitoring of cerebral oxygenation
Until 72 hours after birth

Recommendation for clinical interventions
The rStO2 target normal range is 55% to 85%. Generally, only one intervention should be chosen at a time. All the interventions proposed here are commonly used in this patient group..

$rStO_2$ < 55%
Aim of intervention: A low rStO2 reflects a low CDO2. The interventions should be directed to increasing SaO2, [Hb], and/or CBF.

<u>Assess cardiovascular status:</u>
Blood pressure low in normal range, consider:

- Vasopressor-inotropes
- Fluid bolus (normal saline)
- Decrease mean airway pressure (MAP)

Poor systemic circulation, consider if:
Echocardiography shows low cardiac output and/or low SVC flow

- Inotropes
- Fluid bolus (normal saline)
- Decrease mean airway pressure (MAP)
- Reduce vasopressor

Echocardiography not available but has at least 2 of the following signs:
Lactate > 3.5 mmol/l
CRT > 3 seconds
Urine output < 1 ml/kg/hour

consider:
- Inotropes
- Fluid bolus (normal saline)
- Decrease mean airway pressure (MAP)
- Reduce vasopressor

Patent ductus arteriosus, consider:
- Medical treatment

Assess oxygen transport:
Haemoglobin low in the normal range, consider:
- Red blood cell transfusion

Assess respiratory status:
SaO2 low in normal range, consider:
- Increase FiO2 (ATTENTION: be careful not to exceed the local upper target threshold of SpO2)
- Increase mean airway pressure (MAP)

PCO2 low in normal range, consider:
- Decrease minute ventilation

$rStO_2$ > 85%
Aim of intervention: A high rStO2 reflects impaired oxygen utilisation and/or disturbed cerebral autoregulation (hyperaemia) and interventions should be directed at identifying and treating the underlying cause.

Assess respiratory status:
SaO2 high in normal range, consider:
- Decrease FiO2
- Decrease mean airway pressure

PCO2 high in normal range, consider:
- Increase minute ventilation

Assess blood glucose level:
Blood glucose < 2.5 mmol/l, consider to:
- Increase glucose intake