Comfort Scale scoring

The Comfort scale is a behavioural unobtrusive method of measuring distress in unconscious and ventilated infants, children and adolescence. This scale has eight indicators: alertness, calmness / agitation, respiratory response, physical movement, blood pressure, heart rate, muscle tone, facial tension. Each indicator is scored between 1 and 5 based upon the behaviours exhibited by the patient. Patient should be observed unobtrusively during the previous hour. The total score can range between 8 to 40. A score of 17 to 26 generally indicates adequate sedation and pain control. Due to the complexity of measuring blood pressure and heart rate this scale is used primarily for patients in critical care setting.

Comfort scale procedures

The rater reviews the bedside medical flow chart and calculate the baseline upper and lower limits for the heart rate and mean arterial pressure. The baseline for both heart rate and blood pressure will be an average of the measurements taken in the previous four hours. Values 15% above and below are calculated before beginning observation to allow rapid assessment of variability.

The rater will make their observations during the previous hour. The rater will make an appraisal of the movement, body position, facial expression, response to environment stimuli, etc. according to the COMFORT score.

Over the observation period of 1 hour for each assessment, the rater observes the trend of heart rate and mean arterial pressure and determines whether these are within 15% of the baseline.

Approximately 10 seconds before the end of the observation period, the observer rates the muscle tone based upon patient response to rapid and slow flexion of a non-instrumental extremity (i.e. elbow or knee without an i.v. tape, arterial line or physical restraint.

The rater moves away from the patient and records ratings for each scale. The most extreme (distressed) behaviour during the observation period is scored in each variable. The total COMFORT score is derived as the total of the scores of the eight dimensions.

1. Alertness

Rates the patient's response to ambient stimulation in the environment including response to sound (noise from monitors, intercoms, people talking, pagers etc.), movement, light, etc. To rate this category, no stimulus is introduced by the observer.

1. Deeply asleep: The state of least responsiveness to the environment. The patient's eyes are closed, breathing is deep and regular, and the patient shows minimal response to changes in the environment.

2. Lightly asleep: The patient has their eyes closed throughout most of the observation period, but still responds somewhat to the environment as evidenced by slight movement, facial movements, unsuccessful attempts at eye opening, etc.

3. Drowsy: The patient closes their eyes frequently or makes laboured attempts to open eyes and is less responsive to the environment.

4. Alert and awake: The patient is responsive and interactive with the environment, but without an exaggerated response to the environment. The patient's eyes remain open most of the time or open readily in response to the ambient stimuli.

5. Hyperalert: The patient is hyper-vigilant, may be wide-eyed, attends rapidly to subtle changes in the environmental stimuli and has exaggerated responses to environmental stimuli.

Guideline: If two or more of the following items a score of two or higher, then the child is classified as lightly asleep – respiratory response, Physical Movement, Muscle Tone.

2. Calmness / Agitation

Rates the patient's level of emotional arousal and anxiety.

1. Calm: The patient appears serene and tranquil. There is no evidence of apprehension or emotional distress.

2. Slightly anxious: The patient is not completely calm. The patient shows slight apprehension and emotional distress.

3. Anxious: The patient appears somewhat apprehensive and emotionally distressed, but remains in control.

4. Very anxious: The patient appears very apprehensive. Emotional distress is apparent but the patient remains somewhat in control.

5. Panicky: The patient's total demeanor conveys immediate and severe emotional distress with loss of behavioural control.

3. Respiratory Response:

Rates the patient's oral and respiratory response to an endotracheal tube and intermittent ventilation.

1. No coughing or no spontaneous respiration: Only ventilator generated breaths are apparent. No respiratory movement is apparent between ventilator breaths. No oral movement or chest wall movement occurs except as created by the ventilator.

2. Spontaneous respiration: The patient breathes at regular normal respiratory rate in synchrony with the ventilator. No oral movement or chest wall movement occurs which is contrary to the ventilator movement.

3. Occassional cough / resists ventilator: The patient has occasional oral or chest wall movement contrary to the ventilator pattern. The patient may occasionally breathe out of synchrony with the ventilator.

4. The patient has frequent oral or chest wall movement contrary to the ventilator pattern, coughs regularly, or frequently breathes out of synchrony with the ventilator.

5. Fights ventilator – coughs / chokes / gags: The patient actively makes oral or chest wall movement contrary to the ventilator pattern, coughs and/or gags in a manner which may interfere with ventilation.

4. Physical Movement

Rates frequency and intensity of physical movement

1. None: The patient shows complete absence of independent movement.
2. Occasional, slight movements: The patient shows three or fewer small amplitude movements of the fingers or feet, or very smallhead movement.
3. Frequent, slight movement: The patient shows more than three small amplitude movements of the fingers or feet, or very small head movements.
4. Vigorous movements of extremities only: The patient shows movements of greater amplitude, speed or vigour of hands, arms or legs. The head may move slightly. Movement is vigorous enough to disrupt cannulas.
5. Vigorous movement of extremities, torso and head: The patient shows movements of greater amplitude, speed or vigour of the head and torso

Guideline: Occasional movement is defined as <once/min
Frequent movement is defined as > once/min

5. Blood Pressure

Mean arterial blood pressure rates the frequency of elevations above (or below) a normal baseline. At the beginning of the rating period, baseline, below baseline, and above baseline values are recorded on the rating sheet in an easily observable location. The rater observes the monitor for mean blood pressure during the observational period of an hour and records, with a hash mark, each observation above and below the baseline. Ratings are made upon the number of readings above the baseline.

1. Blood pressure below baseline
2. Blood pressure consistently at baseline
3. Infrequent elevation of 15% or more (1-3 during observation period)
4. Frequent elevations of 15% or more (more than 3 during observation period)
5. Sustained elevation greater than or equal to 15%

Guideline: The baseline for blood pressure will be an average of the measurements taken hourly over the 4 hours previous to trial entry.

6.Heart rate

Heart rate score is based on frequency of elevations above (or below) a normal baseline. At the beginning of the rating period, baseline, above baseline and below baseline values are recorded on

the rating sheet in an easily observable location. The observer observes the heart rate throughout the hour and records, with a hash mark, each episode of elevation above the baseline or below the baseline. Ratings are made based upon the number of readings above the baseline.

1. Heart rate below baseline
2. Heart rate consistently at baseline
3. Infrequent elevations of 15% or more (1-3 during observation period)
4. Frequent elevations of 15% or more (more than 3 during observation period)
5. Sustained elevation greater than or equal to 15%

Guideline: The baseline for blood pressure will be an average of the measurements taken hourly over the 4 hours previous to trial entry.

7. Muscle Tone

Muscle tone is assessed in relation to normal tone in a patient who is awake and alert

The rating is based upon patient response to rapid and slow flexion and extension on a non-instrumented extremity (i.e. elbow or knee without an IV, tape, arterial line or physical restraint). Awrist or ankle may be used if no other joint is available. This rating is the only one that requires active intervention by the rater and is performed at the end of the two minute observation period.

1. Relaxed / None: Muscle tone is absent. There is no resistance to movement.
2. Reduced muscle tone: The patient shows less resistance to movement than normal, but muscle tone is not totally absent
3. Normal muscle tone: resistance to movement is normal.
4. Increased tone / flexion-finger/toes: The patient shows resistance to movement that is clearly greater than normal, but the joint is not rigid.
5. Extreme rigidity /flexion fingers/ toes: Muscle rigidity is the patients predominant state throughout the observation period. This may be observed even without manipulating an extremity.

8. Facial Tension:

Facial tension assesses tone and tension of facial muscles. The standard of comparison is a patient who is awake and alert.

1. Relaxed: The patient shows no facial tone, with absence of normal mouth and eye closing. The mouth may look slack and the patient may drool. Brow smooth.

2. Normal tone: The patient shows no facial muscle tension with mouth and eye closing appropriately. Small movements of the lips, mouth or tongue. Brow smooth.

3. Some tension: This does not include sustained tension of muscle groups such as the brow, forehead or mouth but you may see a frown or eye squeezing.

4. Full facial tension: The patient shows notable sustained tension of facial muscle groups including the brow,forehead, mouth, chin or cheeks.

5. Hyperalert: The patient demonstrates facial grimacing with expression that conveys an impression of crying, discomfort and distress. This generally includes extreme furrowing of brow and forehead and contortion of the mouth.