The COMFORT scale is a behavioral, unobtrusive method of measuring distress in unconscious and ventilated infants, children and adolescents. This scale has eight (8) 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 behaviors exhibited by the patient. Patients should be observed unobtrusively for two minutes. The total score is derived by adding the scores of each indicator. See the COMFORT scale behavioral descriptors and scoring. Total scores can range between 8-40. A score of 17-26 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 a critical care setting.

**COMFORT Scale Procedures**

1. The rater reviews the bedside medical flow chart and calculates baseline, upper and lower limits for the heart rate and mean arterial pressure. The lowest age specific heart rate and mean arterial pressure over the preceding 24 hours is taken as the baseline sign, even if that value occurred post sedation. Values 15% above and below are calculated before beginning observation to allow rapid assessment of variability.

2. The rater begins the two minute observation period from a location where he/she can easily see the patient's entire body and face as well as the vital signs monitor. The rater makes a rapid appraisal of the movement, body position, facial expression, response to environmental stimuli, etc., according to the Comfort Scale.

3. Every 15-20 seconds, the rater observes the heart rate and mean arterial pressure and determines whether these are within 15% of the baseline.

4. Approximately 10 seconds before the end of the observation period, the observer rates muscle tone based upon patient response to rapid and slow flexion of a non-instrumental extremity (i.e. elbow or knee without an IV, tape, arterial line or physical restraint). A wrist or ankle may be used if no other joint is available.

5. The rater moves away from the patient and records ratings for each scale. The most extreme (distressed) behavior observed during the observation period is scored on each variable. The total Comfort score is derived as the total of the scores of the eight dimensions.
COMFORT Scale Scoring

Alertness
Rates the patient's response to ambient stimulation in the environment including responses to sound (noises 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 responses 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 movements, facial movements, unsuccessful attempts at eye openings, etc.
3. Drowsy: The patient closes their eyes frequently or makes labored 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 ambient stimuli.
5. Hyper-alert: 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.

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 behavioral control.

Respiratory Response
Rates the patient's oral and respiratory responses 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 a regular, normal respiratory rate in synchrony with the ventilator. No oral movement or chest wall movement occurs which is contrary to the ventilator movement.

**Respiratory Response (Continued)**

3. **Occasional 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. **Actively breathes against ventilator:** 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.

**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 small head 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 vigor of hands, arms or legs. The head may move slightly. Movement is vigorous enough to potentially disrupt cannulas.

5. **Vigorous movements of extremities, torso and head:** The patient shows movements of greater amplitude, speed or vigor of the head and torso, such as head thrashing, back arching or neck arching. Extremities may also move. Movement is vigorous enough to potentially disrupt placement of an endotracheal tube.

**Blood Pressure**

Mean arterial blood pressure (MAP) 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 arterial blood pressure 5-6 times during the two minute observation period and records, with a hash mark, each observation above or 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 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%.

**Heart Rate**

Heart rate score is based on the 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 records the heart rate 5-6 times during the two minute observation period and records, with a hash mark, each observation above 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%.

**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). A wrist 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-fingers/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 patient's predominant state throughout the observation period. This may be observed even without manipulating an extremity.

**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 muscle tone, with absence of normal mouth and eye closing. The mouth may look slack and the patient may drool.
2. **Normal tone**: The patient shows no facial muscle tension with mouth and eyes closing appropriately.

3. **Some tension**: This does not include sustained tension of muscle groups such as the brow, forehead or mouth.

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

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