



Welcome to the Prehospital Protocol for the Management of Acute Traumatic Pain training program.

This training is intended to prepare prehospital providers in using the Prehospital Protocol for the Management of Acute Traumatic Pain.

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# Introduction

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## Terminal Objective

- Appropriately manage acute traumatic pain utilizing the prehospital guideline



The purpose of the program is to enable the EMS provider to appropriately manage acute traumatic pain by utilizing the prehospital guideline in the field.

# Cognitive

- Identify trauma patients who are candidates for pharmacologic pain management
- Describe the age appropriate pain scale to assess the pain level of traumatic patient
- Explain the narcotic analgesics used to relieve moderate to severe pain in the trauma patient
- Identify the serious adverse effects of pain medication
- Identify the benefits of pain medication
- Identify the patients that are excluded from the pain management guideline
- Discuss the barriers to pain management, in the pediatric patient and describe solutions to the barriers
- Discuss the barriers to pain management in the adult patient and describe solutions to the barriers



The objectives for this program include:

- Identify trauma patients who are candidates for pharmacologic pain management.
- Describe the age appropriate pain scale to assess the pain level of traumatic patient.
- Explain the narcotic analgesics used to relieve moderate to severe pain in the trauma patient.
- Identify the serious adverse effects of pain medication.
- Identify the benefits of pain medication.
- Identify the patients that are excluded from the pain management guideline.
- Discuss the barriers to pain management, in the pediatric patient and describe solutions to the barriers.
- Discuss the barriers to pain management in the adult patient and describe solutions to the barriers.

## Affective

- Recognize the need to manage pain in the prehospital setting when caring for a trauma patient
- Appreciate the beneficial effects of patient care and outcomes as a result of properly managing pain



In addition you should be able to

- Recognize the need to manage pain in the prehospital setting when caring for a trauma patient.
- Appreciate the beneficial effects of patient care and outcomes as a result of properly managing pain.

## Current State of Pain Control

- Pain is a common problem
- Severe pain is an emergency!
- Often not treated or under-treated
  - Worse in children



Pain is considered a common problem in prehospital care. There are estimates that approximately 20% of prehospital calls are for painful conditions.

Severe pain is considered an emergency and should be treated in the field. **Discuss morbidity/mortality.**

EMS has often not treated or under treated a patient in pain. This seems to be even worse in children.

2008 data from Utah showed that pain as a result of broken legs or arms in pediatric patients were treated for pain in less than 5% of cases from EMS in the prehospital setting.



## Current State of Pain Control

- EMS can provide medication faster than hospitals



EMS providers can provide medication faster than hospitals.

The lack of prehospital treatment can delay the delivery of pain medication by up to one hour which in turn can have an adverse affect on the patient.

Research demonstrates that providing analgesia in the prehospital environment, often when pain is most acute, substantially hastens the relief of discomfort.

Comparatively, patients often have to wait in the Emergency Department to be assessed before pain medications are offered, which puts the patient in a longer state of pain (studies indicate that it can take 30-45 minutes for patients to receive pain control in the emergency department).

## Pain Control Barriers

- Inability to assess pain
- Low pain score
- Patient refusal of medication
- Difficult vascular access
- Vascular access not needed
- Delayed transport
- Fear of complications
- Record keeping
- Other care adequate
- Perception of possible drug seeking
- Not familiar with dosing
- Criticism from hospital
- Short transport time



Pain management can have a number of barriers that could effect the administration of pain medications. All of these can be overcome.

Difficult vascular access can be accentuated in pediatrics.

Recording keeping can be complicated when medications are used.

Dosing can be more complicated in children.

Prehospital providers may feel they don't need to give pain medication when transport times are short.



## Overcoming Barriers

- Offline protocols/guidelines (standing orders, including pediatric patients)
- Training (specific to pain assessment)
- Ability to administer pain medication without the need to first start an IV in children
- Medical support and oversight
- Coordination with, and education of, receiving facilities



These barriers can be overcome in a few different ways:

- Offline protocols/guidelines (standing orders, including pediatric patients) - will provide appropriate doses
- Training (specific to pain assessment) -- will give the provider confidence. Should know side effects to look for and the use of Naloxone.
- Ability to administer pain medication without the need to first start an IV in children (intranasal fentanyl)
- Medical support and oversight - will facilitate best practices and performance improvement, and will give the provider the ability to provide pain medication without online medical control
- Coordination with, and education of, receiving facilities – important that the receiving facility be familiar with the Guideline to minimize criticism of prehospital personnel use of pain medications

## Rationale for EMS Pain Management

- Timeliness of Care
  - Significantly decrease time to therapy
- EMS is the most reliable means to provide therapies to patients in a rapid fashion



What is the rationale for EMS providers administering pain medication in the field?

The timeliness of care is an essential element of providing appropriate and effective care in the field. Despite being potentially “minutes” away from a hospital, EMS providers can significantly decrease time to therapy and are the most reliable means to provide these therapies to patients in a rapid fashion.

Use of pain management in the prehospital environment has proven safe.

One example of the positive effects of EMS providers initiating care in the field is : “The Field Administration of Stroke Therapy – Magnesium: FAST-MAG” Trial. The FAST-MAG group was attempting to provide patients with stroke neuro-protective agents (in this case Magnesium) within one hour of symptoms onset. In the study group’s earlier work, Emergency Departments were trying to provide the therapy but found that they were rarely able to provide Magnesium within one hour of symptoms onset. Only by working with EMS agencies, was the study group able to reliably provide therapy within the goal of one hour.

Similar experience exists across the EMS community with other therapies and the administration of pain management is no exception. EMS is the mechanism to provide pain management early in the field for improved patient outcome.

## The Value of Pain Control for Pediatric Patients

- Immediate benefits in the prehospital environment include the improvement of:
  - patient comfort
  - patient vital signs
  - patient assessment
  - physiology
    - Ex: In conditions such as chest wall injuries, control of pain improves respiratory effort



There is great value in administering pain control for the pediatric patient in the prehospital setting.

- The immediate benefits will be for the improvement of patient comfort. No one likes to be in pain and the more you can make the patient comfortable, the better it will be for the patient.
- This will also help to improve the patient's vital signs by decreasing the stress on the body by decreasing the patient's pain.
- You will be able to perform your patient assessment easier since the patient is not in as much pain. The patient will be able to respond to you easier and you will be able to perform a more thorough assessment.
- Last, by decreasing the patient's pain, their physiological state will improve. For example, in conditions such as chest wall injuries, control of pain improves respiratory effort.

## The Value of Pain Control for Pediatric Patients

- Long-term benefits in the prehospital environment
  - Military research reveals decreased incidence of post-traumatic stress
  - Decreased long-term sequela in children
  - Treatment prevents the development of hypersensitized pain pathways



The value of pain control for pediatric patients also has long-term benefits.

- According to research conducted by the military, pain management decreases incidence of post-traumatic stress.
- There is a noted decreased long-term sequel in children as a result of treating pain early in the prehospital setting. **Emphasize positive outcomes.**
- Proactive and early pain treatment may prevent the development of hypersensitized pain pathways in patients who have repeated pain stimuli.

# Opioids in the Prehospital Environment

- Safe and effective
- Multiple routes of administration
  - Fentanyl
    - transmucosal, transdermal, intravenous and intranasal
  - Morphine
    - intravenous and intramuscular
- No statistical significant differences in ability to control pain



Along with being safe and effective, some opioids offer multiple routes of administration.

Fentanyl in particular may be administered via the transmucosal, transdermal, intravenous and intranasal routes

Morphine may be administered via the intravenous and intramuscular routes

Studies comparing IV morphine and IN fentanyl show no statistical differences in the ability to control pain

Furthermore, the option of an IN route of administration offers a painless means to provide pain control for pediatric patients

# Pain Treatment

- Non-pharmacologic
  - RICE
  - Distraction (works well with some children)
  - Hypnosis (time consuming)
  - Acupressure (studied in Europe)
- Pharmacologic
  - Oral analgesics (acetaminophen, NSAIDS)
  - Narcotics (morphine, fentanyl)



There are two ways to manage pain for a patient, non-pharmacological and pharmacologic.

Non-pharmacologic include things like Rest Ice Compression and Elevation or RICE, distracting the child, hypnosis or acupressure has shown to be effective.

This program focuses on the pharmacologic treatment for a patient experiencing pain with the focus on narcotics as described such as morphine and fentanyl as prescribed in the prehospital guideline for management of acute traumatic pain. Both of these medications are effective for severe pain and have been proven safe.

Oral analgesics may be slower actively but still effective.



# Morphine

- Standard narcotic in prehospital setting
- Can be administered IV or IM
- Dosing:
  - 0.1 mg/kg (round to nearest mg)
  - Usually max 10mg/dose
- Benefit:
  - works well for pain
- Disadvantage
  - only parenteral administration



Morphine sulfate is one of the medications recommended for use in this guideline

- It is a standard narcotic used in both the prehospital & hospital setting
- It can be administered both IV or IM
- Dosing: is 0.1 mg/kg (round to nearest mg) with max of 10mg/dose (refer to local protocol)
- It works well for pain, and safe and effective
- Disadvantage is parenteral administration – have to cause pain with a needle to relieve pain (especially for pediatrics)

# Fentanyl

- Used more commonly among aeromedical teams
- 1 mcg/kg (round to nearest 5 mcg)
- Usually max 50-100 mcg/dose
- Respiratory depression is less common
- Works quickly (onset of relief between 30 sec and 5 min)
- Administered IV, IN



Fentanyl is the second medication recommended in this guideline

- It is used more commonly among aeromedical teams
- The dosage is 1 mcg/kg (round to nearest 5 mcg) with max dose usually 50-100 mcg (important to refer to local protocol)
- Respiratory depression & hypotension is less common than morphine
- It works quickly (onset of relief is between 30 sec and 5 min)
- Can be administered both IV, IN – relief of pain without the use of a needle

# Intranasal Fentanyl

- Advantages include:
  - More rapid and painless administration
  - Higher patient and provider satisfaction
  - Similar onset of action to morphine
  - Decreased time to administration
  - Serum levels after IN administration is approximately 70% of IV



There are many advantages to intranasal (IN) fentanyl, including:

- A more rapid and painless administration
- A higher patient and provider satisfaction (certainly with parents of children in pain)
- It has a similar onset of action to morphine
- Decreased time to administer
- Serum levels after IN administration is approximately 70% compared to that of an IV

## Side Effects of Narcotics

- Respiratory depression, which could lead to:
  - Hypoxia
  - Apnea
  - Airway obstruction
- Hypotension
- Miosis (pinpoint pupils)



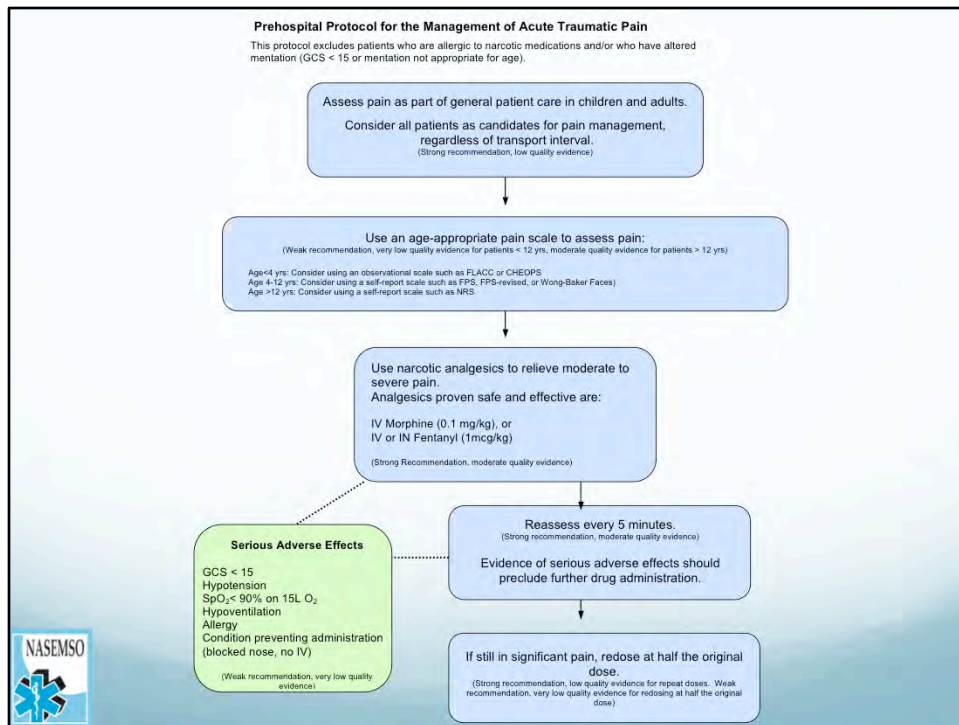
Providers should be aware of side effects of morphine/fentanyl administration:

Respiratory depression which could lead to

- hypoxia,
- apnea,
- airway obstruction.

Hypotension (less likely with fentanyl)

Miosis (pinpoint pupils)



The Prehospital Protocol for the Management of Acute Traumatic Pain was developed by a group from the Children's National Medical Center (CNMC) and the Maryland Institute for Emergency Medical Services Systems (MIEMSS) using the GRADE methodology. GRADE is a standardized and transparent system for the evaluation of evidence.

We will look at the guideline in depth during in the remainder of the training program.

## GRADE Process

- GRADE stands for “Grading of Recommendations Assessment, Development and Evaluation”
  - Is an increasingly important mechanism to review and rate the medical literature
  - Is gaining popularity due to its many benefits, including transparency with its process and definitions
- PICO Questions (Population, Intervention, Comparison, Outcome)
  - Ex: In patients in the prehospital environment, is the provision of pain medications safe and effective?



The GRADE process is used for creating evidence-based guidelines and begins with users explicitly describing their values and preferences regarding a specific topic.

The second step is to develop foreground questions called PICO questions

- PICO stands for Population, Intervention, Comparison, Outcome
- Example of a PICO question:
  - In patients in the prehospital environment, is the provision of pain medications safe and effective?

Next steps include performing literature searches in an effort to answer the PICO questions.



# Interpreting GRADE Recommendations

- Strong recommendation means the desirable effects clearly outweigh the undesirable effects
  - May occur, even in the face of lower quality of evidence
  - However, further research may alter future recommendations
- Weak recommendations occur when the desirable effects are closely balanced by the undesirable effects



Once the literature has been collected, the GRADE process requires the user to classify the level of evidence as High, Moderate, Low, Very Low

Evidence is weighed based on many factors including study design, limitations, directness, imprecision, etc. The weight of the evidence is ONE of the factors that leads to strength of recommendation

Another factor is the estimation of risk and benefit of a given intervention based on the incidence of the illness and the preferences and values delineated in the first steps of the process.

# Assessment

Assess pain as part of the general patient care in children and adults.

Consider all patients as candidates for pain management regardless of transport interval.

(strong recommendation, low quality evidence)

- Assess pain as part of general patient care in children and adults.
- Consider all patients as candidates for pain management, regardless of transport interval.



You need to assess the patient's level of pain as part of your general patient care. Every patient experiencing pain should be considered a candidate for pain management regardless of how close you are to the receiving facility. The only exception is the exclusion noted early regarding the administration of narcotics to those patients with allergies and/or a GCS <15. We will discuss the exclusion criteria in more detail later in this training.

# How Do We Assess Pain?

- The Kid-Friendly Basics:
  - Speak calmly and gently
  - Get down on their level
  - Use the child's name
  - Help the parents remain calm



Pediatrics are typically a high stress situation for anyone. You need to speak calmly and gently to help the child believe everything will be alright.

You are in control of the scene and you need to maintain the control.

It is best to sit down or kneel before examining the child or speaking to him. You should use the child's name in order to gain a relationship with them and show them you care.

A child in distress causes anxiety for all around including the parents. It is important to help all stay calm when possible to make a good assessment of the patient's pain level.

This can help assist you in performing the physical exam of the pediatric patient.

From this point you can perform a pain score on the patient.

# OPQRST: Pain History

- **O:** Onset  
(when did it start)
- **P:** Provocation or Palliation  
(what makes it better or worse)
- **Q:** Quality  
(sharp, dull, crushing)
- **R:** Region and Radiation
- **S:** Severity  
(pain score)
- **T:** Timing  
(type of onset intermittent, constant)



One of the mnemonics you may have learned early in your EMS education was OPQRST. This enables you to do an organized assessment of pain history of the patient.

## **O:** Onset

You can ask such questions as: When did the pain start? What happened when the pain started?

## **P:** Provocation or Palliation

what makes it better or what makes it worse

## **Q:** Quality

Describe your pain for me – typically response may be sharp, dull, or crushing; you need to be careful not to lead the patient on their description of the pain, but rather let it be an open question

## **R:** Region and Radiation

Does the pain go anywhere? Does it hurt anywhere else?

## **S:** Severity and scale

There a variety of pain scales to use in order to identify the severity of the pain. They will be covered in detail later in the program.

## **T:** Timing and type of onset


# Pain Scoring Methods

Use age appropriate pain scale to assess pain

(Weak recommendation, very low quality evidence for patients;  
<12 years moderate quality of evidence for patients >12 years)

Age <4 yrs: Consider using an observational scale such as FLACC or CHEOPS  
Age 4-12 yrs: Consider using a self-report scale such as FPS, FPS-revised, or Wong-Baker FACES®  
Age >12 yrs: Consider using a self-report scale such as NRS

- Self-report
- Behavioral observation
- Physiologic measures



The guideline recommends using a pain scale to assess pain. In this next section, we will discuss the various pain scores recommended for use in this guideline.

There are two main types of pain scores that can be used: self report and behavioral observational.

Self report scores are the most common and are considered to be the “most reliable indicator of the existence and intensity of pain.”

Although children as young as 2 can give you some information about their degree of pain and should be believed, self-report scores are not considered as reliable in the very young. In younger children a behavioral-observational scale would be more appropriate. Behavioral-observational scales identify behaviors that can be observed and scored by the individual assessing pain.

It is important to use the age-appropriate scale when assessing pain in children. In the next few slides, we will go over these scales in detail, however, it is important that your agency pick one scale for each age group. Please pay particular attention to those 3.

# Age-Appropriate Pain Scales

- Age <4 yrs:  
FLACC or CHEOPS
- Age 4-12 yrs:  
Self-report scale such as FPS-revised, or Wong-Baker FACES®
- Age >12 yrs:  
Self-report scale such as NRS



There are a variety of age-appropriate pain scales you can use to assess the pain of your patient. The Prehospital Protocol for the Management of Acute Traumatic Pain identifies the following pain scales for each age range:

- For patients less than 4 yrs of age consider using an observational scale such as Faces, Leg, Activity, Cry, Consolability (FLACC) or Children's Hospital of Eastern Ontario Pain Scale (CHEOPS)
- For patients 4-12 yrs of age consider using a self-report scale such as Faces Pain Scale (FPS), FPS-revised, or Wong-Baker FACES®
- Age >12 yrs: Consider using a self-report scale such as the Numeric Rating Scale (NRS)



# FLACC Scale

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to; distractible	Difficult to console or comfort

**Note:** Each of the five categories Face (F), Legs (L), Activity (A), Cry (C), and Consolability (C) is scored from 0-2, which results in a total score between 0 and 10.

From Merkel, Voepel-Lewis, Shayevitz, & Malviya (1997). The FLACC: A behavioral scale for scoring postoperative pain in young children. *Pediatric Nursing*, 23(3) 293-297.



For patients less than 4 yrs of age consider using an observational scale such as FLACC (Faces, Leg, Activity, Cry, Consolability). The category and scoring for each category is described on this chart.

Patients who are awake: You should Observe for at least 1-2 minutes. Observe legs and body uncovered. Reposition patient or observe activity, assess body for tenseness and tone. Initiate consoling interventions if needed

Patients who are asleep: You should observe for at least 2 minutes or longer. Observe body and legs uncovered. If possible reposition the patient. Touch the body and assess for tenseness and tone.

Whenever feasible, behavioral measurement of pain should be used in conjunction with self-report. When self-report is not possible, interpretation of pain behaviors and decision-making regarding treatment of pain requires careful consideration of the context in which the pain behaviors were observed.

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## FLACC Scale Total

- Assessment of Behavioral Score:
  - 0 = Relaxed and comfortable
  - 1-3 = Mild discomfort
  - 4-6 = Moderate pain
  - 7-10 = Severe discomfort/pain



Whenever feasible, behavioral measurement of pain should be used in conjunction with self-report. When self-report is not possible, interpretation of pain behaviors and decision-making regarding treatment of pain requires careful consideration of the context in which the pain behaviors were observed.

Each category is scored on a 0-2 scale, which results in a total score of 0-10

### **Assessment of Behavioral Score:**

- 0 = Relaxed and comfortable
- 1-3 = Mild discomfort
- 4-6 = Moderate pain
- 7-10 = Severe discomfort/pain

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# CHEOPS

Item	Behavioral	Score	Definition
Cry	No cry	1	Child is not crying.
	Moaning	2	Child is moaning or quietly vocalizing silent cry.
	Crying	2	Child is crying, but the cry is gentle or whimpering.
	Scream	3	Child is in a full-throated cry, sobbing, may be scored with complaint or without complaint.
Facial	Composed	1	Neutral facial expression.
	Grimace	2	Score only if definite negative facial expression.
	Smiling	0	Score only if definite positive facial expression.
Child Verbal	None	1	Child not talking.
	Other complaints	1	Child complains, but not about pain, e.g., "I want to see mommy" or "I am thirsty".
	Pain complaints	2	Child complains about pain.
	Both complaints	2	Child complains about pain and about other things, e.g., "It hurts; I want my mommy".
	Positive	0	Child makes any positive statement or talks about other things without complaint.
Torso	Neutral	1	Body (not limbs) is at rest, torso is inactive.
	Shifting	2	Body is in motion in a shifting or serpentine fashion.
	Tense	2	Body is arched or rigid.
	Shivering	2	Body is shuddering or shaking involuntarily.
	Upright	2	Child is in a vertical or upright position.
	Restrained	2	Body is restrained.
Touch	Not touching	1	Child is not touching or grabbing at wound.
	Reach	2	Child is reaching for but not touching wound.
	Touch	2	Child is gently touching wound or wound area.
	Grab	2	Child is grabbing vigorously at wound.
	Restrained	2	Child's arms are restrained.
Legs	Neutral	1	Legs may be in any position but are relaxed; includes gentle swimming or separate-like movements.
	Squirm/kicking	2	Definitive uneasy or restless movements in the legs and/or striking out with foot or feet.
	Drawn up/tensed	2	Legs tensed and/or pulled up tightly to body and kept there.
	Standing	2	Standing, crouching or kneeling.
	Restrained	2	Child's legs are being held down.

- 6 categories, each with 3-4 levels of care

- Total score= 4-13

The CHEOPS pain scale is an observational scale for measuring postoperative pain in children aged 1-7 yrs; however, this guideline recommends that you use this scale for patients less than 4 years of age. It can be used to monitor the effectiveness of interventions for reducing the pain and discomfort and includes six categories of pain behavior.

Pain is assessed across several factors: the nature of the cry, facial expressions, verbalizations the child makes, the movement of the torso, their movements to touch the injured part of their body, and the movement of their legs. All of these areas are assessed and scored. The scores are then added together providing a range of 4, indicating no pain, to 13 indicating the most intense pain or discomfort

## Faces Pain Scale (FPS)

- Used in children 4-12 years
- Children point to face that represents their pain
- Compute using score 0-6



For patients 4-12 yrs of age consider using a self-report scale such as FPS.

Have the patient indicate the face that best represents the severity of his/her current pain.

Scoring: Assign each face a number corresponding to the pain descriptor selected by the patient and keep a record of it. The neutral face is given a value of zero (0) which is the first face going from left to right, and the most distraught face is given a value of six(6) the last face going left to right. You may either compute the patient's mean pain level over time or choose instead to track the pain score of the face selected by the patient and determine whether it decreases over time.

Patients should view the figure without numbers.

## Faces Pain Scale-Revised (FPS)-R

- Used in children 4-12 years
- Children point to face that represents their pain
- Compute using score 0-10



For patients 4-12 yrs of age consider using a self-report scale such as FPS-revised. This scale is slightly different on how you instruct the child versus the FPS scale.

When you give instructions for the FPS - Revised, say "hurt" or "pain," whichever seems right for a particular child.

"These faces show how much something can hurt. This face [point to left-most face] shows no pain. The faces show more and more pain [point to each from left to right] up to this one [point to right-most face] - it shows very much pain. Point to the face that shows how much you hurt [right now]."

Score the chosen face 0, 2, 4, 6, 8, or 10, counting left to right, so '0' = 'no pain' and '10' = 'very much pain.' Do not use words like 'happy' and 'sad'. This scale is intended to measure how children feel inside, not how their face looks.

# Wong-Baker FACES® Scale

Wong-Baker FACES Pain Rating Scale



From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: Wong's Essentials of Pediatric Nursing, ed. 6, St. Louis, 2001, p. 1301. Copyrighted by Mosby, Inc. Reprinted by permission.



For patients 4-12 yrs of age consider using a self-report scale such as Wong-Baker Faces as another alternative method to FPS or FPS-Revised

This scale doesn't take much explanation, helps when there is a language barrier. However, there are few studies that have looked at whether these are accurate representations of pain faces.

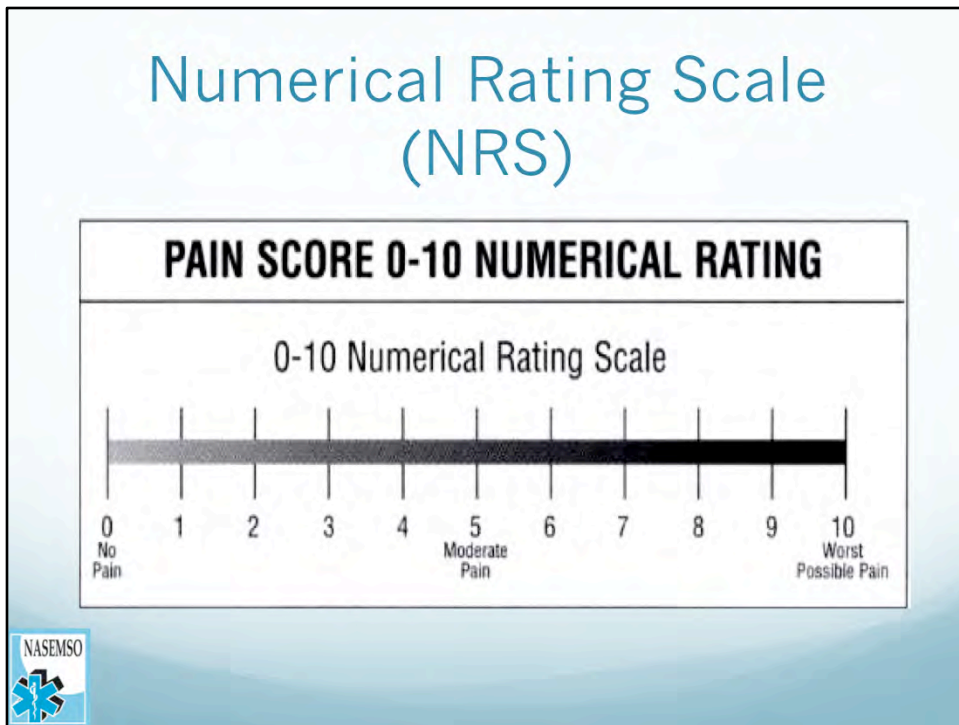
Explain to the person that each face is for a person who has no pain (hurt) or some, or a lot of pain.

- Face 0 doesn't hurt at all.
- Face 2 hurts just a little bit.
- Face 4 hurts a little bit more.
- Face 6 hurts even more.
- Face 8 hurts a whole lot.
- Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Ask the person to choose the face that best depicts the pain they are experiencing. Use the corresponding number to score the pain level.



# Numerical Rating Scale (NRS)



For Ages >12 yrs: Consider using a self-report scale such as NRS

This is the most commonly used rating scale in emergencies.

Patients asked to rate pain between 1 and 10

- 1 representing no pain
- 10 representing worst pain

The patient is asked any one of the following questions:

- What number would you give your pain right now?
- What number on a 0 to 10 scale would you give your pain when it is the worst that it gets and when it is the best that it gets?
- At what number is the pain at an acceptable level for you?

When the explanation suggested in #1 above is not sufficient for the patient, it is sometimes helpful to further explain or conceptualize the Numeric Rating Scale in the following manner:

- 0 = No Pain
- 1-3 = Mild Pain (nagging, annoying, interfering little with ADLs)
- 4-6 = Moderate Pain (interferes significantly with ADLs)
- 7-10 = Severe Pain (disabling; unable to perform ADLs)

Document the responses as you would in all pain rating scales.

## BLS Interventions

- Perform general assessment
- Obtain VS:
  - BP, HR, RR, temp., GCS, pain score
- Maintain airway
- Immobilize any obvious injuries
- Place in position of comfort
- If multi-system trauma, follow appropriate spinal immobilization procedures
- Regularly reevaluate the patient
- Transport for medical evaluation (in position of comfort)



As a BLS provider you should:

- Perform General Pediatric Assessment
- Obtain VS including:
  - BP, HR, RR, temp., GCS
- Obtain a pain score
- Maintain airway
- Immobilize any obvious injuries
- Place in position of comfort
- If multi-system trauma, follow appropriate Spinal Immobilization guidelines
- Transport for medical evaluation in position of comfort

## ALS Interventions

- Follow BLS interventions
- Place on cardiac monitor and pulse oximetry
- Determine need for IV access
  - If mucosal atomizer available, consider intranasal route for medication administration if no other access needed
- Initiate treatment for underlying cause of pain



As an ALS Provider you should

- Follow BLS interventions
- Place on cardiac monitor and pulse oximetry
- Determine need for IV access
  - If mucosal atomizer available, consider intranasal route for medication administration if no other access needed
- Initiate treatment for underlying cause of pain

# ALS Interventions

Use narcotic analgesics to relieve moderate to severe pain.

Analgesics proven safe and effective are:

IV morphine (0.1 mg/kg), or  
IV or IN fentanyl (1mcg/kg)

(Strong Recommendation, moderate quality evidence)

- Reassess mental status and breathing
- Naloxone for respiratory depression



Depending on the level of training, you need to treat the patient's pain. Once you have determined the patient's pain score, your next actions should be to provide the patient with management of their pain.

Once you administer the pain medication you should

- Reassess mental status and breathing
  - Naloxone for respiratory depression

# Reassess

Reassess every 5 minutes

(Strong recommendation, moderate quality evidence)

Evidence of serious adverse effects should preclude further drug administration.



Reassess pain score 5 minutes after intervention.

Important to look for adverse effects/reactions.

## Redose

If still in significant pain, redose at half the original dose.

(Strong recommendation, low quality evidence for repeat doses.  
Weak recommendation, very low quality evidence for redosing at half the original dose)



If still significant pain, redose medication at half the dose.

Evidence: Consider the GRADE process. Evidence shows that redosing is important and so the recommendation was strong; however the amount for redosing was uncertain, therefore a weak recommendation. Maryland implementation shows that the redosing recommendation is safe and effective.



# Adverse Effects/ Contraindications



## Serious Adverse Effects

GCS < 15  
Hypotension  
SpO<sub>2</sub> < 90% on 15L O<sub>2</sub>  
Hypoventilation  
Allergy  
Condition preventing  
administration  
(blocked nose, no IV)

(Weak recommendation, very low quality  
evidence)

There are Serious Adverse Effects that can occur after the administration of pain medications.

They may include:

- GCS < 15
- Hypotension
- SpO<sub>2</sub> < 90% on 15L O<sub>2</sub>
- Hypoventilation
- Allergy to narcotic medication
- Condition preventing administration such as blocked nose or no IV

## Exclusion Criteria

- Allergies to narcotic medications
- Altered mentation
  - (GCS < 15 or mentation not appropriate for age)



### Glasgow Coma Scale

#### EYE OPENING

- None (1) = Even to supra-orbital pressure
- To pain (2) = Pain from sternum/limb/supra-orbital pressure
- To speech (3) = Non-specific response, not necessarily to command
- Spontaneous (4) = Eyes open, not necessarily aware

#### MOTOR RESPONSE

- None (1) = To any pain; limbs remain flaccid
- Extension (2) = Shoulder adducted and shoulder and forearm internally rotated
- Flexor response (3) = Withdrawal response or assumption of hemiplegic posture
- Withdrawal (4) = Arm withdraws to pain, shoulder abducts
- Localizes pain (5) = Arm attempts to remove supra-orbital/chest pressure
- Obeys commands (6) = Follows simple commands

#### VERBAL RESPONSE

- None (1) = No verbalization of any type
- Incomprehensible (2) = Moans/groans, no speech
- Inappropriate (3) = Intelligible, no sustained sentences
- Confused (4) = Converses but confused, disoriented
- Oriented (5) = Converses and oriented

The Prehospital Protocol for the Management of Acute Traumatic Pain should not be followed if the patient has an allergy to narcotic medications and/or with patients who have an altered mental status. An altered mental status would be determined based on the mental status that is not appropriate for that age group or have a Glasgow Coma Score of less than 15.

### Note:

A patient with eyes that remain closed except to verbal or painful stimuli is a GCS of 14 and does not meet inclusion criteria

Review the Glasgow Coma Scale on this slide before continuing.

## Exclusion Example

- 12 yo with fall from tree
- Abrasions to forehead and R arm and bruising to forearm around wrist
- Not opening eyes except to verbal stimuli (GCS 14)
- Moaning in pain



12 yo with fall from tree

Abrasions to forehead and R arm and bruising to forearm around wrist

Not opening eyes except to verbal stimuli (GCS 14)

Moaning in pain

This scenario would not meet criteria for offline pain management given GCS <15

## Case Studies



## Case 1

- Called to scene at the local playground/ picnic area
- 10 yo otherwise healthy male
- Fell off a picnic table
- Obvious left forearm deformity
  - Intact CSM



*How will you care for this patient at the scene and during transport?*

This is a 10 year old male with an obvious left forearm injury, concerning for a fracture.

He has had a fall from a relatively low height with no reports of head injury.

First assessment is mental status, and helping him stay calm.

The next step is to assess his pain with a faces pain scale, either Wong Baker FACES, FPS or FPS-R.

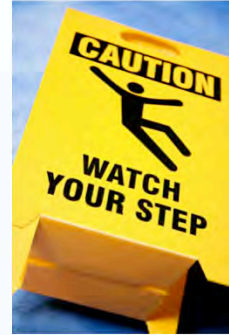
Once assessed, it would be appropriate to determine any risk factors or contraindications for administration of opioid analgesia. If there are none, using a length-based tape or identifying his weight is appropriate to determine the correct dose of medication.

Depending on which analgesic you have, you can administer morphine intravenously, or fentanyl either using the mucosal atomizer or intravenously.

Pain treatment before splinting and immobilization may help facilitate continued care of this patient.

## Case 2

- Called to local water park
- 14 yo female with history of asthma
- Slipped while running
- Swelling of left elbow, abrasion on scalp



*Name important parts of her history and physical that may affect treatment decisions*



This is a patient with a known history of asthma who had a ground level fall with abrasions to the elbow and scalp.

First you need to consider a possible head injury, and ensure that she has a GCS of 15 with no signs of altered mental status.

Given that she is alert and oriented, she can communicate her degree of pain. In her age group, you can reliably use a numeric rating scale to determine the severity of her pain. Pain less than a 4 may not necessarily require administration of a opioid but all factors need to be taken into account.

Her history of asthma, albeit important, is not a contraction to administration of opioids in this case.



## Case 3

- Called to a residence
- 3½ yo male, otherwise healthy
- Pulled a hot pot of coffee off the counter
- First and second degree burns on the front and back of lower legs
- No other injuries
- FLACC pain scale rating of 8



*What are your options to treat his pain?*



Your best option to treating pain in this patient is the use of Intranasal fentanyl in a 1 mcg/kg dose if possible in your agency. This obviates the need for IV placement in a younger child which may be more challenging. Additionally, it can be given rapidly for pain treatment.

Consider suctioning the nose if significant amount of mucous from crying to better facilitate administration. If intranasal fentanyl is not an option in your agency, proceed with IV fentanyl or morphine for control of pain. Also, remember to estimate a weight on the patient to ensure the appropriate dose if being given.

## Conclusion

- Pain is a common condition in adults and pediatrics that should be managed by EMS providers
- There are various medical and non-medical means to treat pain, but serious pain should be treated with parenteral opioid analgesics
- Many of the barriers for the provision of these medications in pediatrics may be overcome by adherence to the evidence-based “Prehospital Protocol for the Management of Acute Traumatic Pain”



# Resources

- Articles and resources are located here:
  - <https://www.nasemso.org/Projects/ImplementationOfEBG/documents/Resources>

