



ANASCORP

The Dollar and Cents\$ of Things\$


Pharmacy and Therapeutics Clinical Consensus Group

ED Clinical Consensus Group and ED Clinical Discipline Group

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Introduction

 Anascorp is a scorpion antivenom recently approved by the FDA. This power point presentation will discuss the use of Anascorp and provide a cost analysis of conventional treatment versus use of Anascorp. The Banner Anascorp team have developed this module to educate staff on key decision making points as well as education on the proper way to administer Anascorp.

Course Objectives

- 🦂 By the end of this course, you will be able to explain the following:
- 🦂 Scorpion sting envenomation signs and symptoms
- 🦂 Severity grade levels by symptoms and treatment
- 🦂 Comparisons of treating scorpion poisoning with and without Anascorp
 - 🦂 Clinical outcomes
 - 🦂 Costs
- 🦂 How to use Anascorp

Arizona Scorpion Exposure

- 🦂 Venomous scorpions found mostly in AZ
 - 🦂 66% of reported scorpion stings in the U.S. occurred in AZ
- 🦂 11,250 stings reported in 2010
 - 🦂 1,137 (10%) were seen or referred to health care facilities
 - 🦂 5% neurotoxicity in adults
 - 🦂 80% neurotoxicity in children under age 2



ANASCORP

- 🦂 Approved by FDA August 2011
- 🦂 Indicated for treatment of patients with clinical signs of scorpion envenomation
- 🦂 Reduces hospitalization time
 - 🦂 Untreated requires a minimum of 24 hours PICU care
 - 🦂 Treated reduced time of ED monitoring to 2.3-4.2 hours
 - 🦂 Treatment with Anascorp eliminates or significantly decreases PICU admission
- 🦂 Reduces or eliminates need for benzodiazepine sedation
 - 🦂 Midazolam average rates of 0.5mg/kg/hr or total dose of 5.25 mg/kg as compared to 0.3 mg/kg/hr on standard sedations
- 🦂 95%-100% of patients treated with Anascorp were relieved of systemic signs within 4 hours.

Sign & Symptoms of Envenomation

Neuromuscular Dysfunction

 Shaking

 Muscle Twitching

 Restlessness

Cranial Nerve Dysfunction

 Abnormal Eye Movements

 Trouble Swallowing

 Tongue Fasciculation

 Excessive Saliva

 Breathing Problems

 Fluid in Lungs

 Shortness of breath

 Blurred Vision

 Slurred Speech

 Death if untreated in severe cases

Mild Envenomation – Grade I and II

🦂 Signs and Symptoms

🦂 No apparent respiratory distress

🦂 Pain at envenomation site

🦂 Mild muscle twitching

🦂 Treatment





🦂 Analgesics

🦂 Reassurance by Medical Staff



Moderate Envenomation – Grade III






Cranial Nerve Dysfunction

-  Mild respiratory distress, not requiring support
-  Abnormal eye movement
-  Pain at envenomation site
-  Increased salivation, potential slurred speech

OR Musculoskeletal Dysfunction






-  Moderate muscle twitching

Treatment

-  Consider use of Anascorp (do not sedate patient if using Anascorp)
-  Consult toxicologist as needed
-  Analgesics
-  Oxygen
-  Benzodiazepine sedation (if not considering Anascorp)

Severe Envenomation – Grade IV







Cranial Nerve Dysfunction

-  Respiratory Distress requiring support – possible intubation
-  Abnormal eye movement
-  Pain at envenomation site
-  Inability to maintain/handle increased secretions
-  Violent neuromotor hyperactivity

AND Musculoskeletal Dysfunction

-  Severe muscle twitching

Treatment

-  Consider use of Anascorp (do not sedate patient if using Anascorp)
-  Consult toxicologist as needed
-  Analgesics
-  Intubation as needed
-  High Doses of benzodiazepine sedation (if not considering Anascorp)
-  Admission to Pediatric Intensive Care Unit

Cost Analysis

Mild Envenomation – Grade I and II

🦂 3 year old male patient presents to ED 2 hours after scorpion sting

🦂 Symptoms on Arrival

🦂 No Systemic neurological changes present (oculogyric eye movement, fasciculation, agitation)

🦂 Crying

🦂 Pain at site of sting

🦂 Vital Signs

🦂 Temp 36.5

🦂 HR 195

🦂 RR 36

🦂 O2 Sat 100% on room air

🦂 Weight 15 kg



Treatment without Anascorp Grade I and II

🦂 Analgesic

- 🦂 Tylenol

- 🦂 Morphine

🦂 ED Visit Level Charges (may vary depending on facility)

- 🦂 Grade I and II Envenomation are ESI 3

- 🦂 ED level charge - \$908.66

🦂 Time spent in ED

- 🦂 Average time of 3-4 hours

🦂 Discharge Disposition

- 🦂 Home



Cost Analysis

Severe Envenomation – Grade IV

- 🦂 3 year old male patient presents to ED 2 hours after scorpion sting
- 🦂 Symptoms on Arrival
 - 🦂 Cranial Nerve Dysfunction (oculogyric eye movement, fasciculation, agitation)
 - 🦂 Severe Tremors
 - 🦂 Severe muscle twitching
 - 🦂 Continuous stridor
 - 🦂 Respiratory distress
 - 🦂 Increased oral secretions – unable to maintain/handle secretions
 - 🦂 Mentation altered
- 🦂 Vital Signs
 - 🦂 Temp 36.5
 - 🦂 HR 195
 - 🦂 RR 45
 - 🦂 O2 Sat 85% on room air
 - 🦂 Weight 15 kg





Treatment with ANASCORP Grade IV Envenomation

- 🦂 \$3,780.00/vial (Pharmacy Cost)
 - 🦂 Standard dose of 3 vials: \$11,340.00
 - 🦂 If 5 vials are used: \$18,900.00
- 🦂 ED Visit (may vary by facility)
 - 🦂 ESI II
 - 🦂 ED Level Charge – Critical \$4764
- 🦂 Time Spent in ED
 - 🦂 Average time of 2-6 hours
- 🦂 Discharge Disposition
 - 🦂 Home
- 🦂 Insurance Coverage
 - 🦂 Unknown





Treatment without Anascorp Grade IV





Midazolam

-  Average cumulative dose required 5.76 mg/kg
-  Cost \$104.9/dose (pharmacy cost)

Fentanyl

-  Average cumulative dose required
-  Cost \$48.00/dose

ICU admission (may vary by facility)

-  Average stay in ICU 16.5 hrs
-  Maximum recorded stay 42 hours
-  Cost \$ 4560.00/ day room charge only (BDMC/CCMC Cost)
-  Physician Cost, therapy cost and equipment vary per patient

Rapid Sequence Intubation Medications

Ventilator management

Insurance Coverage

ANASCORP Guidelines

 To help providers make decisions about whether patient qualifies for Anascorp the following assessment questions will be asked by Firstnet Discern Advisor :

1. Is the patient experiencing neuromuscular dysfunction related to scorpion envenomation such as shaking, involuntary jerking of extremities or restlessness?
2. Is the patient experiencing cranial nerve dysfunction related to scorpion envenomation such as blurred vision, nystagmus, hypersalivation, trouble swallowing, tongue fasciculation or airway dysfunction?

 A “yes” answer to either questions would classify the patient as a grade III envenomation

 A “yes” answer to both questions would classify the patient as a grade IV envenomation

P&T CCG Recommendation

- 🦂 Recommended adding ANASCORP to formulary and restricting use to Grade III and IV envenomation with a maximum of 5 vials per patient
- 🦂 Initial dose per package insert is 3 vials to be followed by additional doses of 1 vial in intervals of 45-60 minutes based on symptom resolution
 - 🦂 **Consider initial dosing of 1 vial when no respiratory compromise is noted**
- 🦂 ED providers must document the signs and symptoms that the patient is experiencing as well as the grade of envenomation
- 🦂 All cases of Anascorp use will be retrospectively reviewed by Pharmacy to ensure judicious use of the product.

Basic Pharmacology

Clinical Pharmacology

-  Composed of venom-specific F(ab)₂ fragments of immunoglobulin G (IgG) that bind and neutralize venom toxins, facilitating redistribution from target tissues and elimination from the body

Pharmacokinetics

Parameter	Mean +/- SD
Half-Life (hrs)	159 +/- 57

-  Peak Anecdotal experience is 45-60 minutes

Anascorp Administration

- 🦂 Physician determines if patient needs Anascorp infusion
 - 🦂 **Exclude if allergic to horse serum**
- 🦂 Physician orders Anascorp
- 🦂 First infusion is 1 to 3 vials of Anascorp reconstituted in 50 ml of Normal Saline. Infuse over 10 minutes (300ml/hr)
 - 🦂 Consider dosing of 1 vial when no respiratory compromise is noted
- 🦂 Reassess 45-60 minutes after the end of the first infusion to determine if a 2nd dose is needed
- 🦂 Second dose is 1 vial reconstituted in 50 ml of Normal Saline. Infuse over 10 minutes
- 🦂 Reassess 45-60 minutes after the end of the second infusion to determine if a 3rd dose is needed
- 🦂 Maximum dose is 5 vials.

Adverse Reactions

Most Common Adverse Reactions (observed in > 2% of patients)

 Vomiting

 Pyrexia

 Rash

 Nausea

 Pruritus

Moderate Adverse Reaction (observed in <0.1% of patients)

 Serum Sickness

Severe Adverse Reaction (observed in < 0.3% of patients)

 Respiratory distress

 Aspiration

 Hypoxia

 Ataxia

 Pneumonia

 Eye Swelling

Points to Consider

- 🦂 Develop scripting for nursing and physicians
- 🦂 If facility does not have PICU capabilities
 - 🦂 Ground Transportation cost is approximately \$1200
 - 🦂 Air Transportation cost is approximately \$10,000
- 🦂 Average income of family seen in ED is \$35,000 annually
- 🦂 7.3 % of patients on Self Pay for year 2010
- 🦂 58 % of patients on AHCCS for year 2010

Summary

- 🐍 Anascorp should be considered with all Grade III or IV envenomations
- 🐍 Firstnet discern advisor to be implemented to assist clinician in decision making
- 🐍 The first infusion of Anascorp is reconstituted in 50ml normal saline and administered over 10 minutes.
- 🐍 It is recommended to wait 45-60 minutes between doses to maximize the efficacy of Anascorp
- 🐍 All administration of Anascorp will be retrospectively reviewed by pharmacy to ensure appropriate use of medications

Questions?

