



# Back to the Basics

## Do You Remember First Aid?

Guy Peifer





# Assessment & The Alphabet

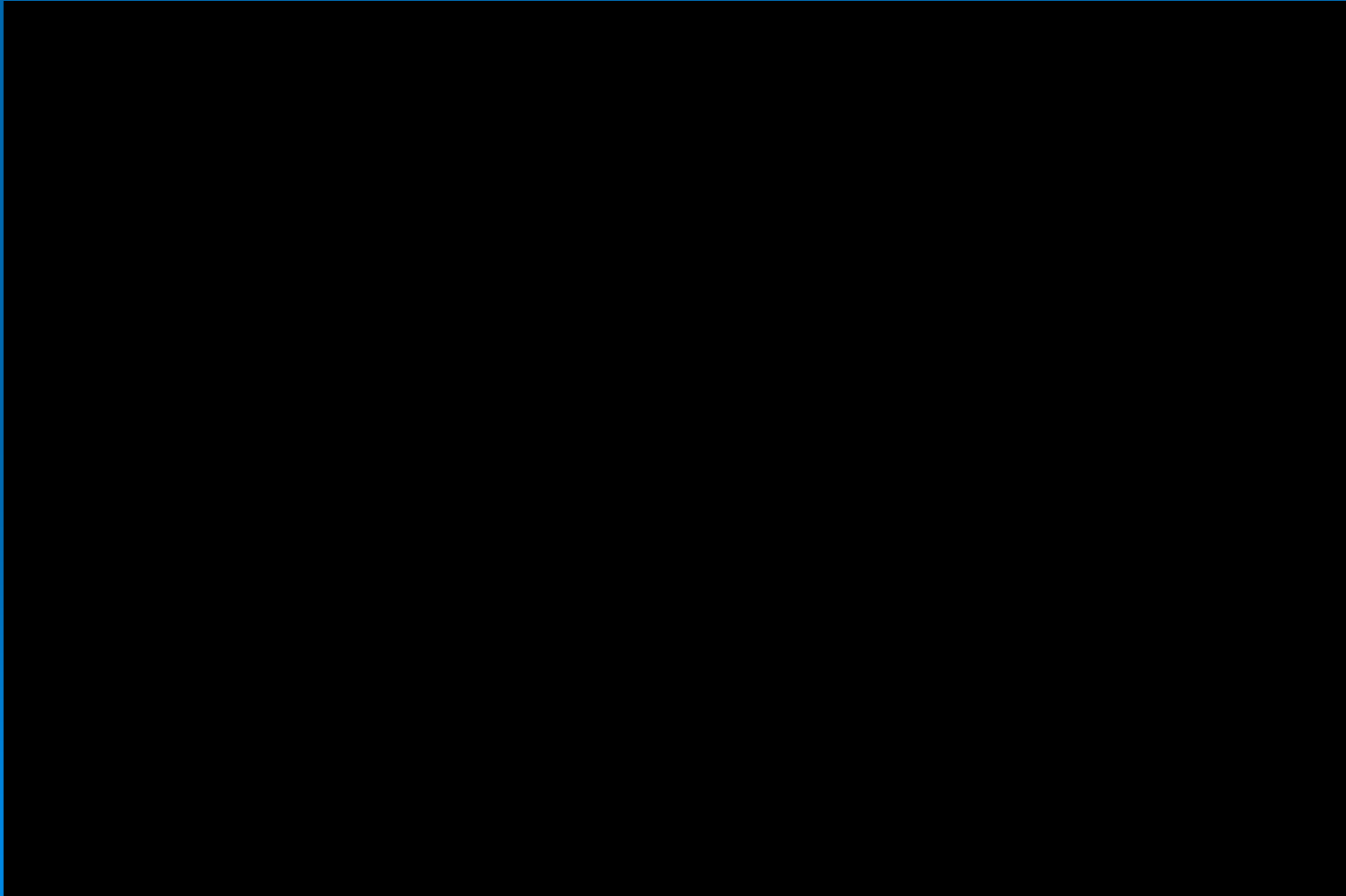
- How many of you think patient assessment is a long and tedious (think torture) process?
- Would you like an easier method?

**I CAN'T HEAR YOU!**

The text "I CAN'T HEAR YOU!" is written in a bold, red, sans-serif font. Below the text, there are several faint, light blue circular ripples that resemble water droplets hitting a surface, scattered across the bottom half of the slide.

# Assessment & The Alphabet

- Sing with me.....



# Assessment & The Alphabet

- A Airway:
- B
- C Is it open?
- D
- E Is it clear?
- F
- G Is the patient maintaining it?

# Assessment & The Alphabet

- A Breathing: Inspect
- B Palpate
- C Auscultate
- D Seal
- E Stabilize
- F Oxygen
- G

# Assessment & The Alphabet

- A                      Circulation:              Pulse
- B
- C                      Skin
- D                      Bleeding
- E
- F
- G

# Assessment & The Alphabet

- **A**      Decision:      High/Low Priority
- **B**
- **C**      Disability:      AVPU  
Pupils
- **D**      Simple Commands
- **E**
- **F**      Diagnostics:      Vitals  
Pulse Oximetry
- **G**      Blood Glucose  
Pulse Cooximetry

# Assessment & The Alphabet

- A Expose
- B
- C Examine
- D
- E
- F
- G

# Assessment & The Alphabet

- A Focused Assessment
- B
- C Focused History
- D
- E
- F
- G



# Assessment & The Alphabet

➤ A

G = GO!

➤ B

➤ C

O = Ongoing Assessment

➤ D

➤ E

➤ F

➤ G

# Safe Handling and Use of Oxygen

➤ *What Does It All Mean?*



# Crown Marking Diagram Medical "E" Cylinder

**DOT-3AL**2015..MMXXXXXXXX M4002 01\*02 CATALINA M24 © TC-3ALM139

## **DOT-3AL**

The U.S. regulatory authority, the Department of Transportation '**DOT**', and specification '**3AL**' to which the cylinder is manufactured in compliance.

# Crown Marking Diagram Medical "E" Cylinder

DOT-3AL**2015**.MMXXXXXXXX M4002 01\*02 CATALINA M24 TC-3ALM139

**2015**

The service pressure "**2015**", in pounds per square inch (psi), of the cylinder.

# Crown Marking Diagram Medical "E" Cylinder

DOT-3AL2015. **MMXXXXXXXX** M4002 01\*02 CATALINA M24 TC-3ALM139

**MMXXXXXXXX** The cylinder serial number. The serial number prefix of "**MM**" is specific to the 24 cuft 2015 psi medical oxygen cylinder, manufactured at Catalina Cylinders, Garden Grove, California facility, followed by "**XXXXXXXX**" a seven-digit number.

# Crown Marking Diagram Medical "E" Cylinder

DOT-3AL2015..MMXXXXXXXX **M4002** 01\*02 CATALINA M24 © TC-3ALM139

## **M4002**

The DOT Manufacturers Number (M-Number) "**M4002**" issued to Catalina Cylinders, Garden Grove, California facility.

# Crown Marking Diagram Medical "E" Cylinder

DOT-3AL2015..MMXXXXXXXX M4002 **01\*02** CATALINA M24 TC-3ALM139

## **01\*02**

The original hydrostatic test date of the cylinder, month '01', separated by "\*" the Independent Inspection Agency (IIA) symbol, followed by the year '02', performed at the time of manufacture of the cylinder. The "\*" represents the symbol of the Independent Inspection Agency (IIA) performing the inspection of and certifying the acceptance of the cylinder at the time of manufacture.

**Aluminum cylinders are certified for 5 years**

# Crown Marking Diagram

## Medical "E" Cylinder

DOT-3AL2015..MMXXXXXXXX M4002 01\*02 **CATALINA M24** ② TC-3ALM139

### **CATALINA**

The name of the manufacturer of the cylinder.

### **M24**

The cylinder identifier. Identifies the cylinder is designed for medical service '**M**' with a capacity of 24 cu ft "**24**" of oxygen, hence **M24**.

### ②

Actually an "**O**" with a "**2**" inside the "**O**". This signifies that the cylinder is for oxygen service and the lot of cylinders was subjected to residual hydrocarbon testing.



# Crown Marking Diagram

## Medical "E" Cylinder

DOT-3AL2015..MMXXXXXXXX M4002 01\*02 CATALINA M24 © TC-3ALM139

### TC-3ALM

The Canadian regulatory authority, Transport Canada "**TC**" and specification "**3ALM**" to which the cylinder is manufactured in compliance.

### 139

The service pressure "**139**" (in bars) of the cylinder.

# Crown Marking Diagram Medical "E" Cylinder

Additional markings found only on  
**steel** cylinders:

- + “Plus” after the date indicates that the cylinder is certified to be overfilled by 10%
- ★ “Star” after the date indicates that the cylinder is certified for 10 years

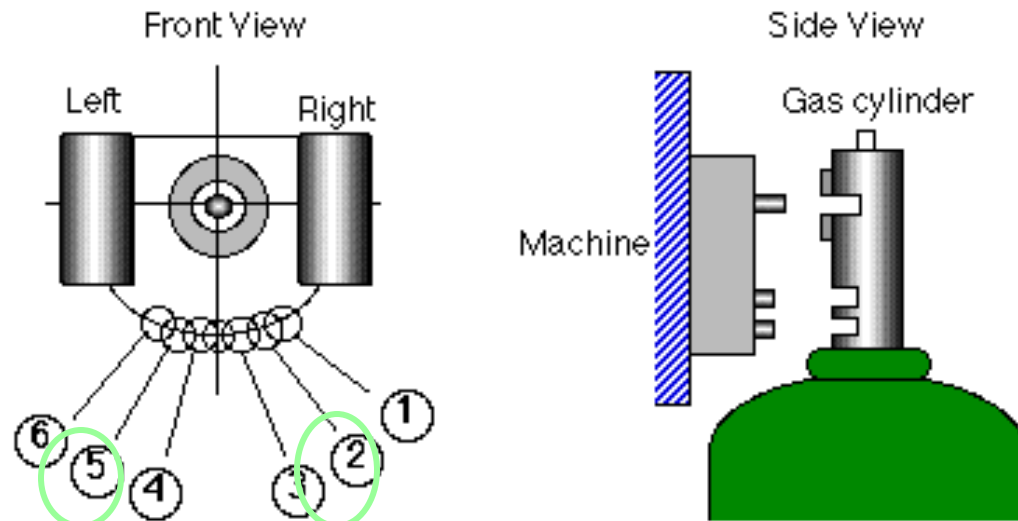
# Pressure Relief Device

*Located on the valve stem opposite the oxygen port :*



# Oxygen

## Pin Index Safety System for Medical Gas Cylinders



Gas	Index Pins
Air	1 & 5
CO <sub>2</sub> Mix (CO <sub>2</sub> <7%)	2 & 6
CO <sub>2</sub> Mix (CO <sub>2</sub> >7%)	1 & 6
Cyclopropane	3 & 6
Ethylene	1 & 3
He-O <sub>2</sub> (<80%)	2 & 4
He-O <sub>2</sub> (>80%)	4 & 6
Nitrous Oxide	3 & 5
Oxygen	2 & 5

# Oxygen

- DISS
- (Diameter Index Safety System)
  - Used on cylinders larger than E



# Sealing Washer

Metal-bound elastomeric  
Designed for multiple use applications



**Buna N:** Standard Nitrile is also known as Buna-N. Excellent resistance to petroleum-based oils and fuels, water and alcohols. Nitrile also has good resistance to acids and bases, except those with a strong oxidizing effect.



# Crush Gasket

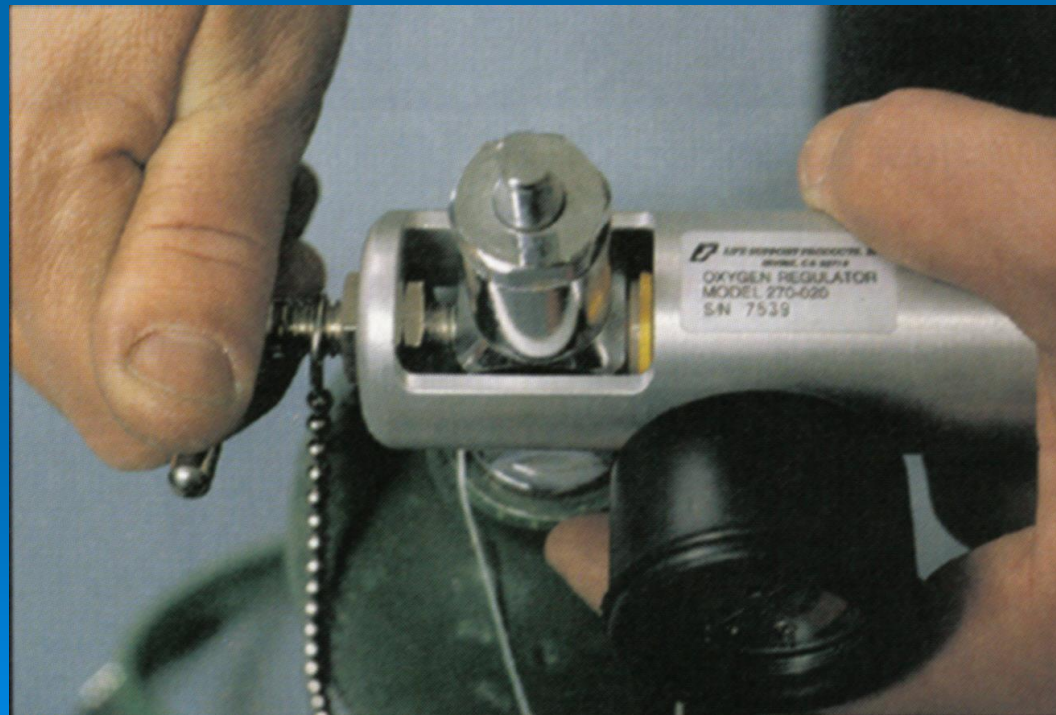
Plastic (usually Nylon ®)

Suitable for single use applications.



# Assembling Oxygen Regulator

- Tighten T-screw HAND TIGHT





# What You Never Learned in EMT Class

## Part 800.24(b)

3. portable oxygen with a minimum 350 liter capacity (medical "D" size) with pressure gauge, regulator and flow meter and one spare cylinder, medical "D" size or larger. The oxygen cylinders must contain a minimum of 1000 PSI pressure;

# Lets Keep Going.....

## NYS DOH PS-98-06

### Ambulance Oxygen Systems & Equipment

[Note: PS-98-06 supersedes Part 800.24(b)]

An adequate supply of oxygen must be available at the beginning and at all times during a shift or ambulance call. To meet the requirements of 800.24.b, **the Department will accept a minimum of 2,000 psi in any combination of portable cylinders** (eg. 1 @ 1700 and 1 @ 700) on a vehicle at the beginning of the shift.

# Confused Yet?

NYS DOH PS-98-06

Ambulance Oxygen Systems & Equipment

(Continued)

One portable cylinder must contain at least 500 psi at any time. A vehicle with less than 500 psi in one portable cylinder must be considered out of service until restocked.

An 'installed' cylinder (H, K, Q, etc.) must contain at least 500 psi.

## So What Is The Minimum?

- Absolute minimum safe residual pressure
  - 200 psi
  - NEVER let cylinder go completely empty
    - INCLUDING IN THE CLASSROOM SETTING

# Bandaging Basics

So You Think Can Bandage?



The objective in bandaging is to control bleeding and prevent contamination

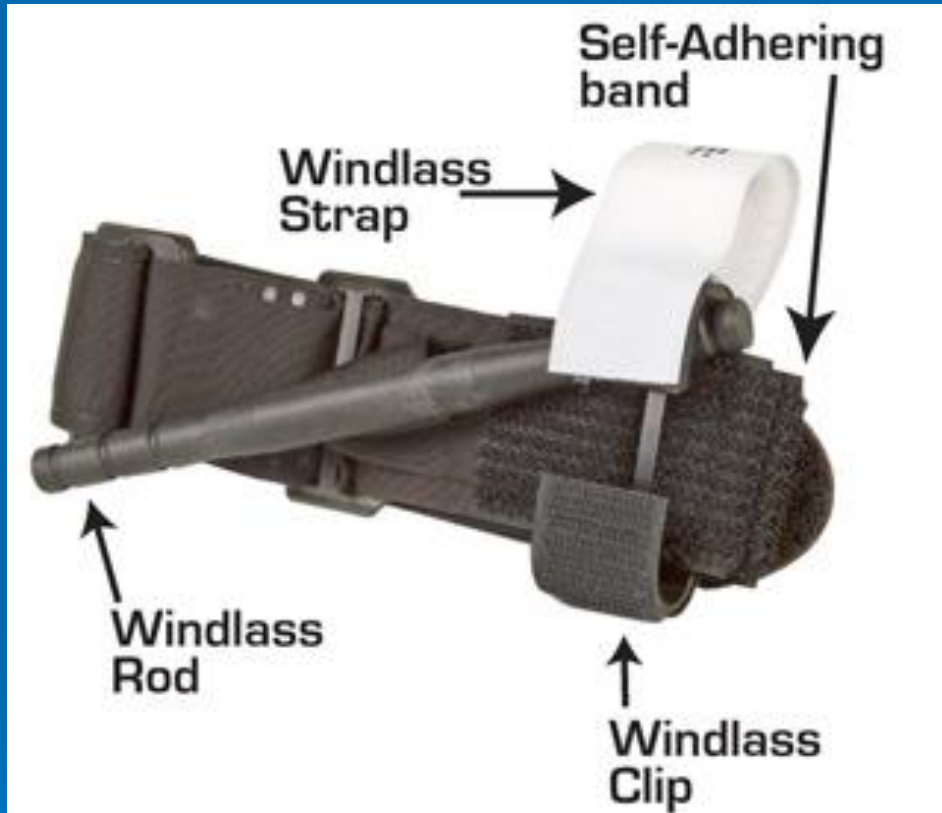
## Dressings

- should be sterile
- should cover the entire wound

## Bandages

- hold dressings (and splints) in place
- should be clean or sterile
- should cover of the entire dressing

# They're Back !!!



# Spiral Bandage



Hold the bandage so that it rolls off around the limb; Anchor at tapered area of limb.



Open Spiral to hold the dressing quickly



# Spiral Bandage



Create two tails by doubling the bandage back

# Spiral Bandage



Tie-off; always double knot – no bows.

# Recurrent Turn



Drape the bandage over the center of the dressing.

# Recurrent Turn



Continue draping while fanning out to both sides.



# Recurrent Turn



Use a spiral to secure and close the bandage.

# Recurrent Turn

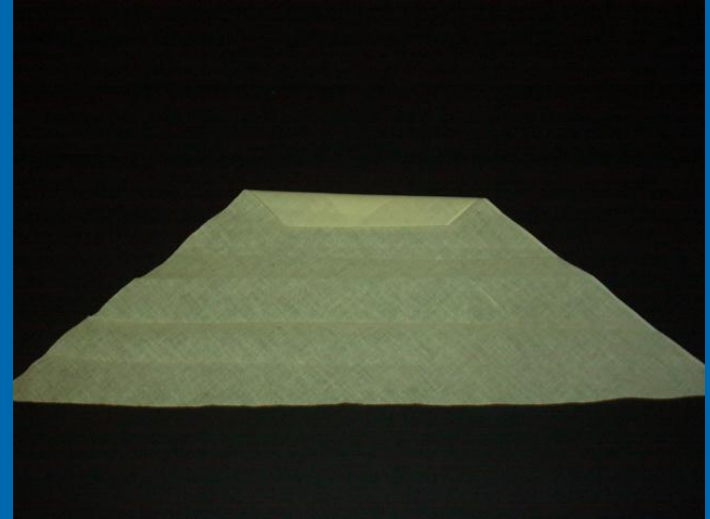
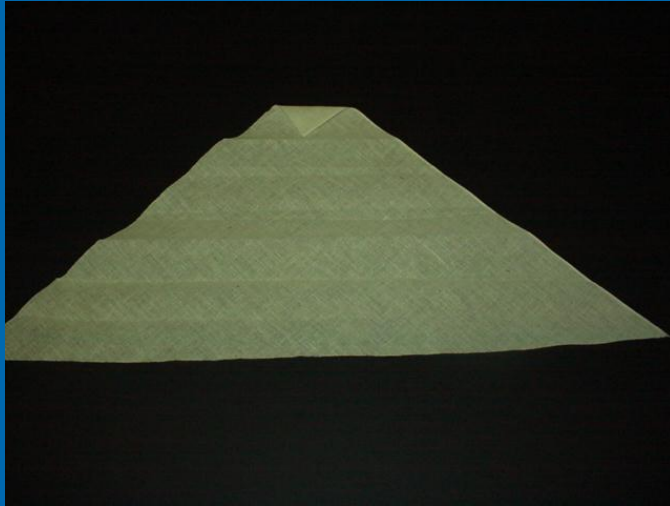


Tie off on the limb.

*So.... Can You Fold a  
Triangle Bandage into a  
Cravat*

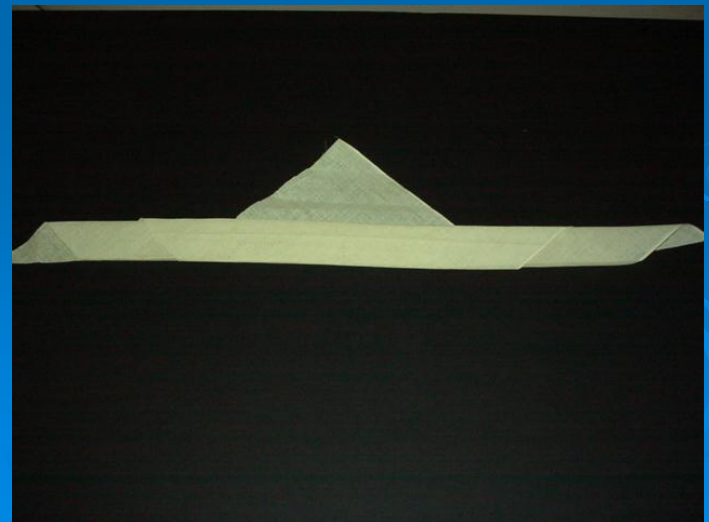
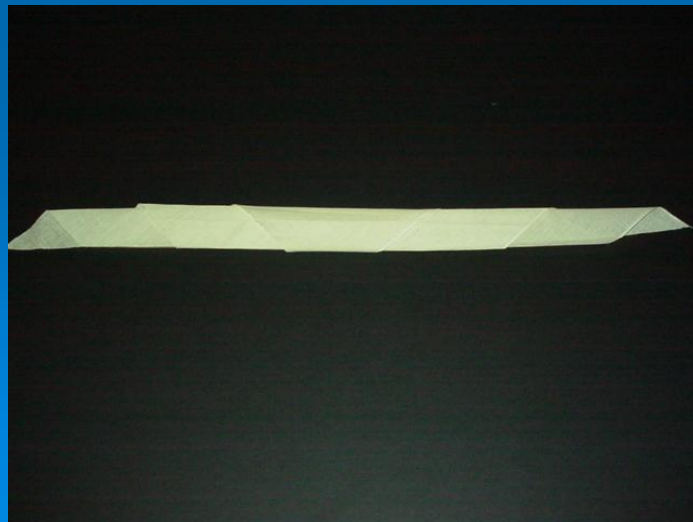
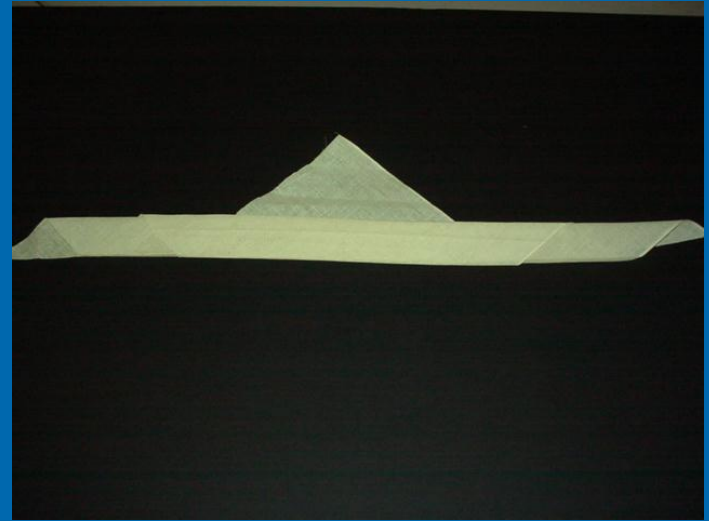
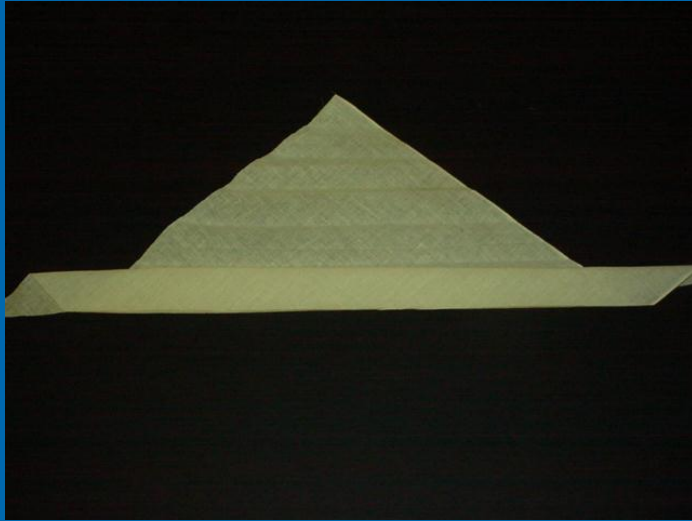


# How Many of You Do This?

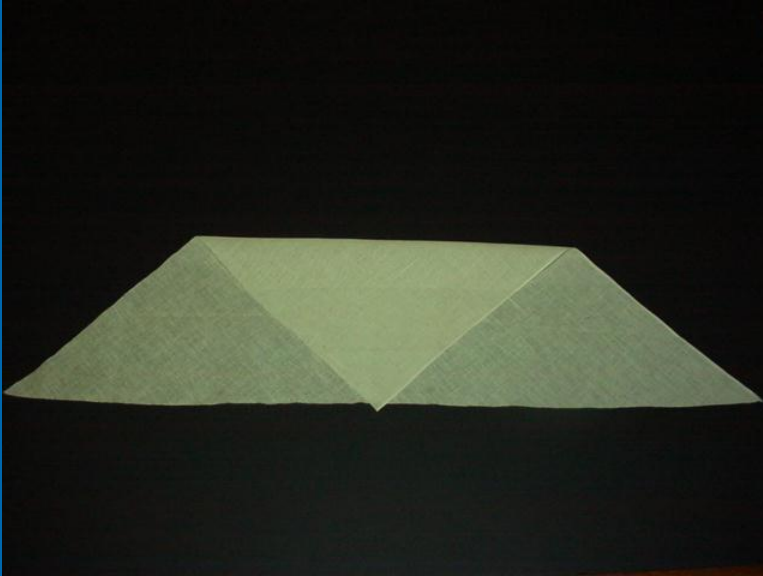




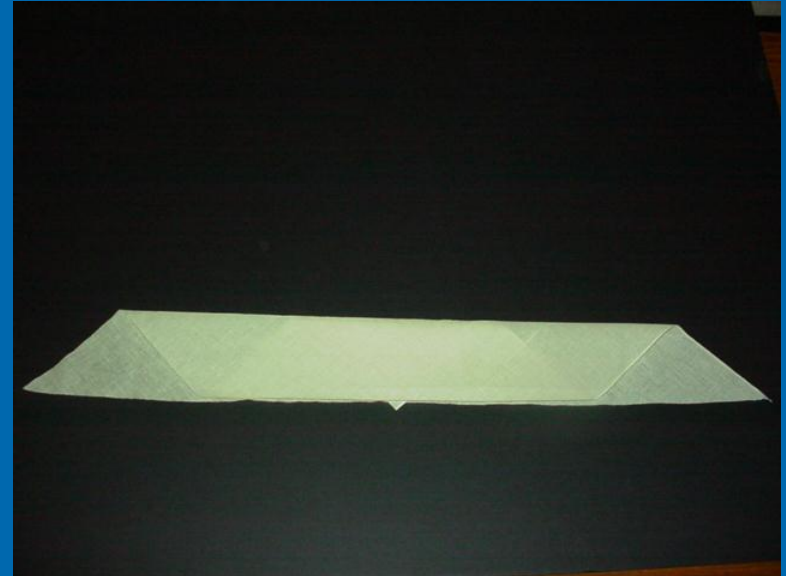
# Or This?



# Let's Try This



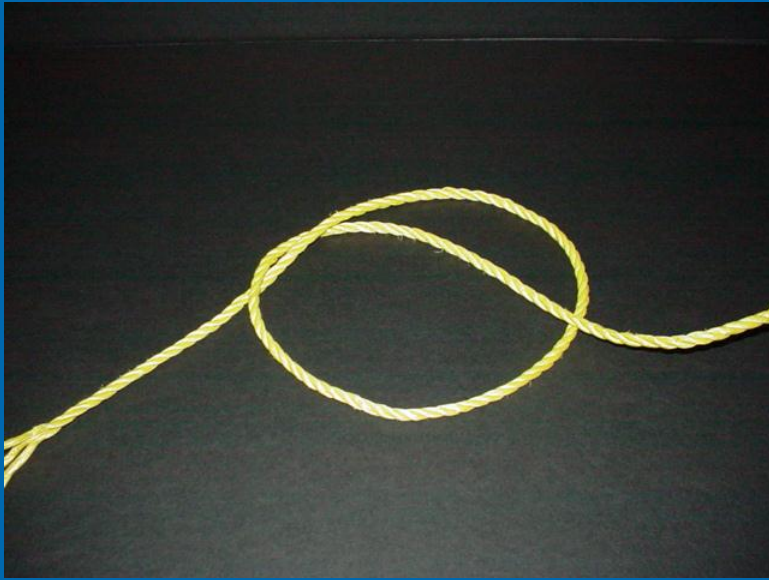
This provides a 3 inch wide cravat



Open one fold for a 6 inch wide cravat



# Surgeon's Knot



Start with a simple knot.



Pass the end through a second time.

The double twist adds friction to the knot. This allows you to let go to get a better grip to *gently* tighten the knot. It still requires a second knot to be secured.

Can You Use a Cravat  
to Bandage a Wound?





## 3 inch Cravat Bandage for Forearm



Place cravat diagonally

## 3 inch Cravat Bandage for Forearm



Wrap tails – one distal, one proximal  
to cover the dressing

## 3 inch Cravat Bandage for Forearm



Tie-off over the wound

# How About a Head Wound?

- How would you guys handle a laceration to the top of the scalp?



# Triangle Bandage for Scalp



Fold the base up 1-2" to create a faux-bandage;  
position just above the eyebrows

# Triangle Bandage for Scalp



Cross the tails below the occiput and tie-off on the forehead;  
Tuck the ends in (or cut them off)

# Triangle Bandage for Scalp



Holding the faux-bandage, gently pull the apex to take up the slack and apply gentle pressure to the dressing; tuck in the end.

*Pressure bandage for palm  
(or amputated limb)*





# Pressure bandage for palm



Place dressing over wound; have patient grasp bulky padding

# Pressure bandage for palm



Place center of cravat over wrist

# Pressure bandage for palm



Cross tails on back of hand:

Tail from pinky side covers index and middle fingers;

Tail from thumb side covers pinky and ring finger

# Pressure bandage for palm



Cross tails over palm, pull snug to hold pressure.  
Keep the thumb free.



# Pressure bandage for palm



Cross around back of wrist and tie-off over wrist

*Open triangle for burned hand*



# Open triangle for burned hand



Dress hand with moist dressings between fingers

# Open triangle for burned hand



Wrap with burn sheet or MTD

# Open triangle for burned hand



Place hand with tip of fingers at mid-point of triangle

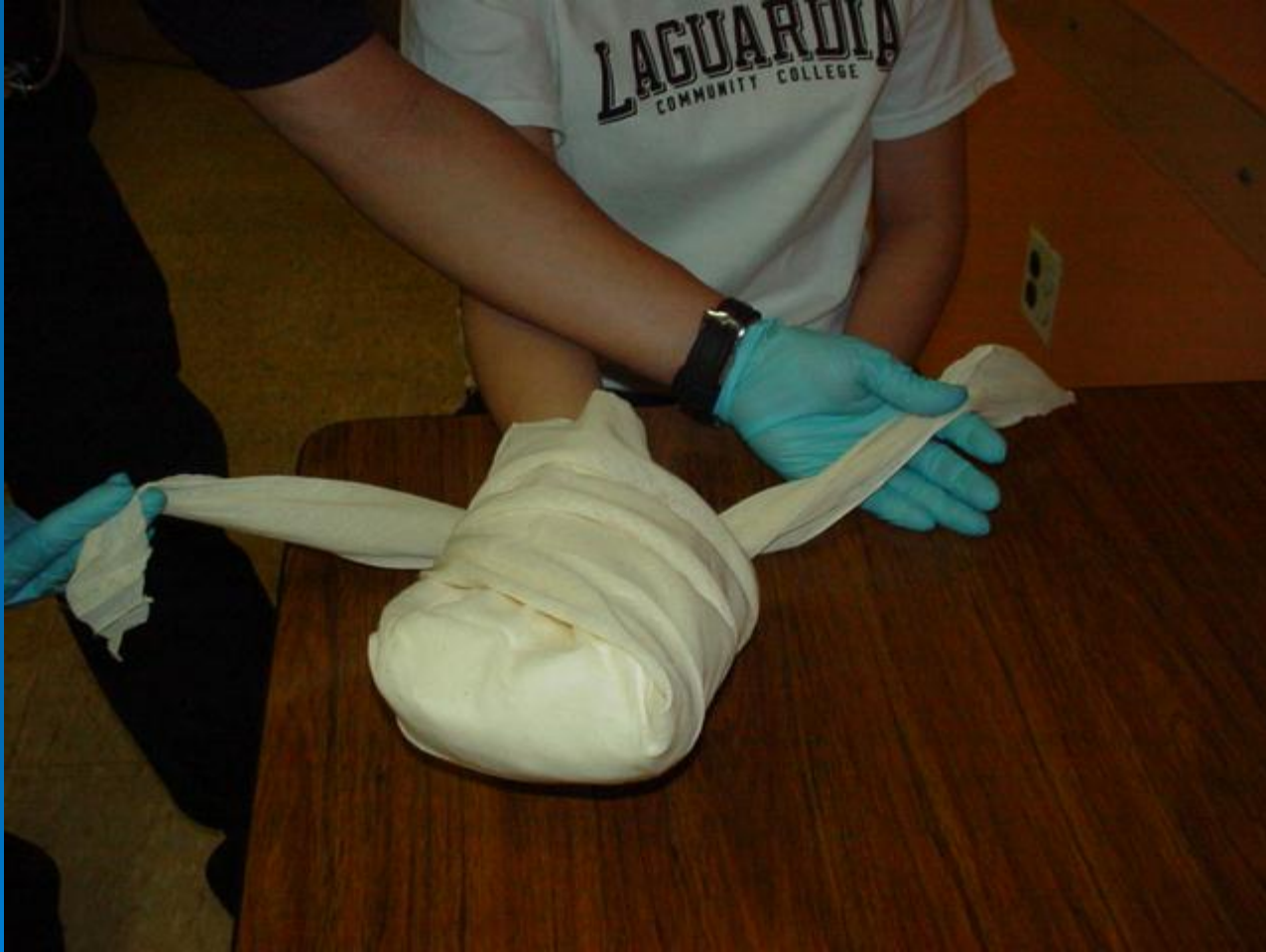


# Open triangle for burned hand



Fold up apex to the wrist

# Open triangle for burned hand



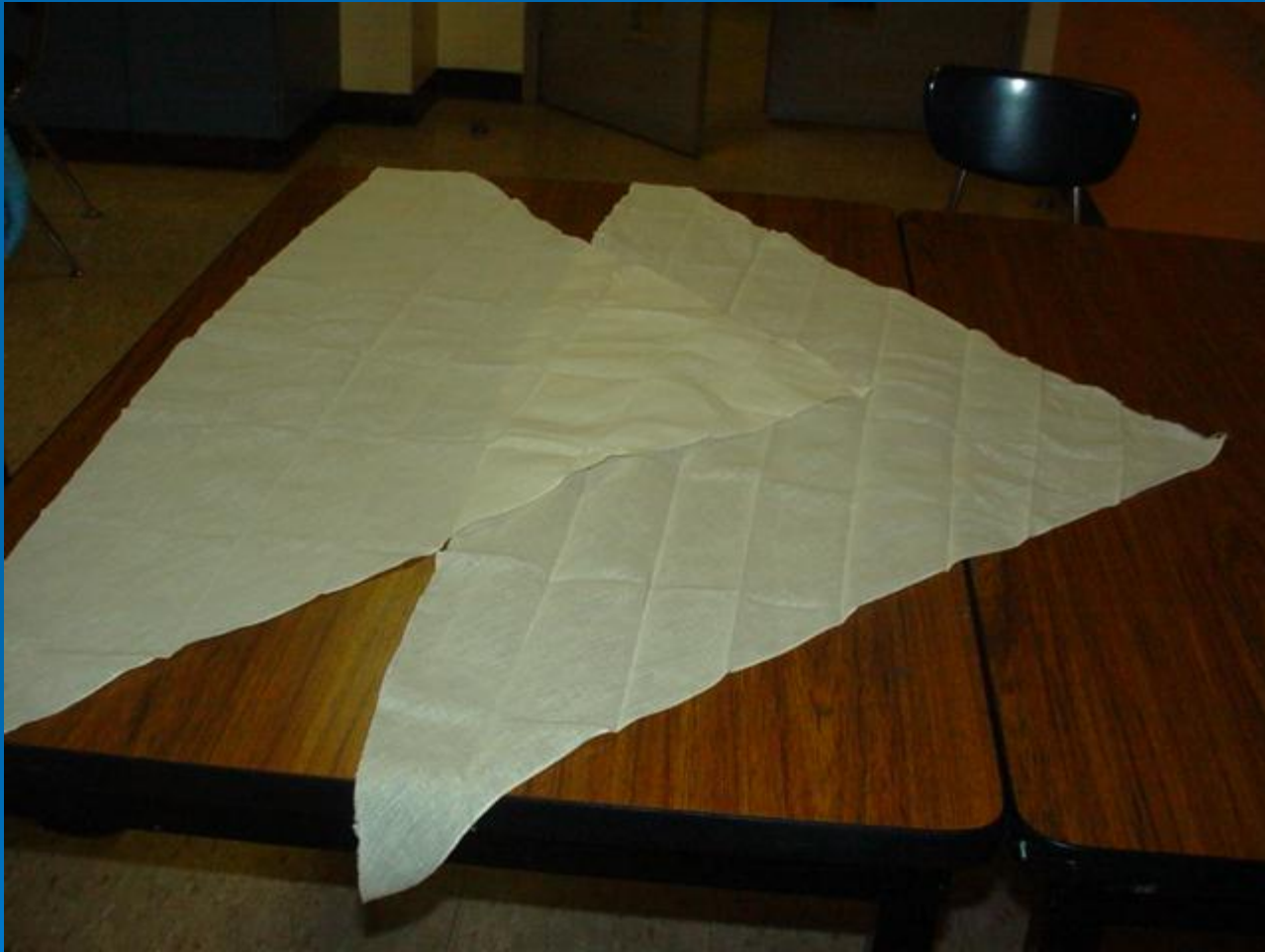
Draw tails loosely around, then tie-off over the wrist

*4-tail bandage for shoulder/hip*





## 4-tail bandage for shoulder/hip



Lay out one triangle to be folded into a cravat, then lay second triangle with apex approx. in center of first

## 4-tail bandage for shoulder/hip



Fold first triangle into a cravat (1st fold)

## 4-tail bandage for shoulder/hip



Fold first triangle into a cravat (2nd fold)

## 4-tail bandage for shoulder/hip



Fold first triangle into a cravat (3rd fold)  
This locks the second triangle in place



## 4-tail bandage for shoulder/hip



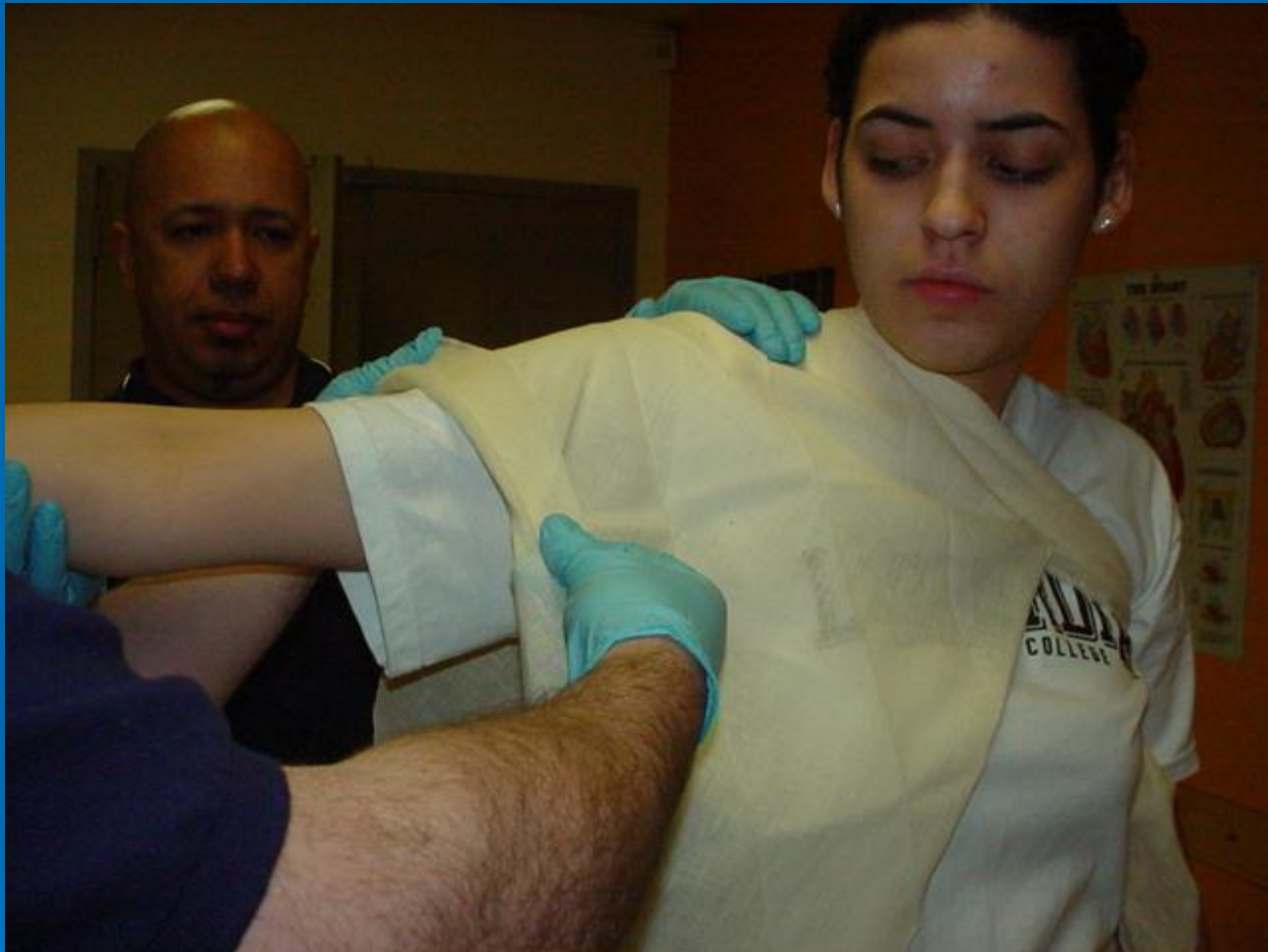
Have your partner hold a dressing over the wound.  
Place the cravat portion at the nape of the neck (do not flip over).

## 4-tail bandage for shoulder/hip



Secure under the opposite arm.

## 4-tail bandage for shoulder/hip



Elevate the patient's arm. Using the exposed portion of the triangle to hold the dressing, fold up approx. 2 inches of the base to create a faux-bandage.



## 4-tail bandage for shoulder/hip



Draw up any slack

## 4-tail bandage for shoulder/hip



Cross the tails under the arm (no knot), bring them around along the fold and tie on the outside.

## 4-tail bandage for shoulder/hip



Lower the patient's arm to take up remaining slack and apply pressure to the wound

## 4-tail bandage for shoulder/hip



The same bandage can be used for the hip, but requires more bulky dressing to hold pressure on the wound.

*Splinting  
Back to Basics*





The objective in splinting is to immobilize the injury and the two adjacent joints.

Rigid splints must be padded

- Most commercially available splints are pre-padded

Voids between the splint and the limb should be filled to provide additional support

- Fill voids prior to securing the splint

Cravats should generally be applied proximal to distal to prevent the splint from becoming too tight

- The operative word is “snug”



# Upper Extremity Splinting

Generally, one splint is adequate and more comfortable for the patient. A second splint tends to be cumbersome and uncomfortable.

For upper extremities, if the splint is too long, it should extend distally.

- > A forearm splint that extends past the elbow will become problematic when applying a sling and transporting through doorways.
- > A humerus splint that extends past the shoulder will become problematic placing the patient on a stretcher.

# Lower Extremity Splinting

Generally, two splints are desirable because the bones tend to be larger, requiring greater support.

For lower extremities, if the splint is too long, it should extend proximally.

- > Splints that extend more than a few inches past the foot become problematic during transport.



# *Sling and Swathe*



# Full Arm Sling



*Knot in apex  
to cup elbow  
optional*



Lay open triangle against patient's chest with the upper tail over the shoulder of the un-injured side and apex at the elbow of the injured side

# Full Arm Sling



*If no knot,  
use safety  
pin to cup  
elbow*



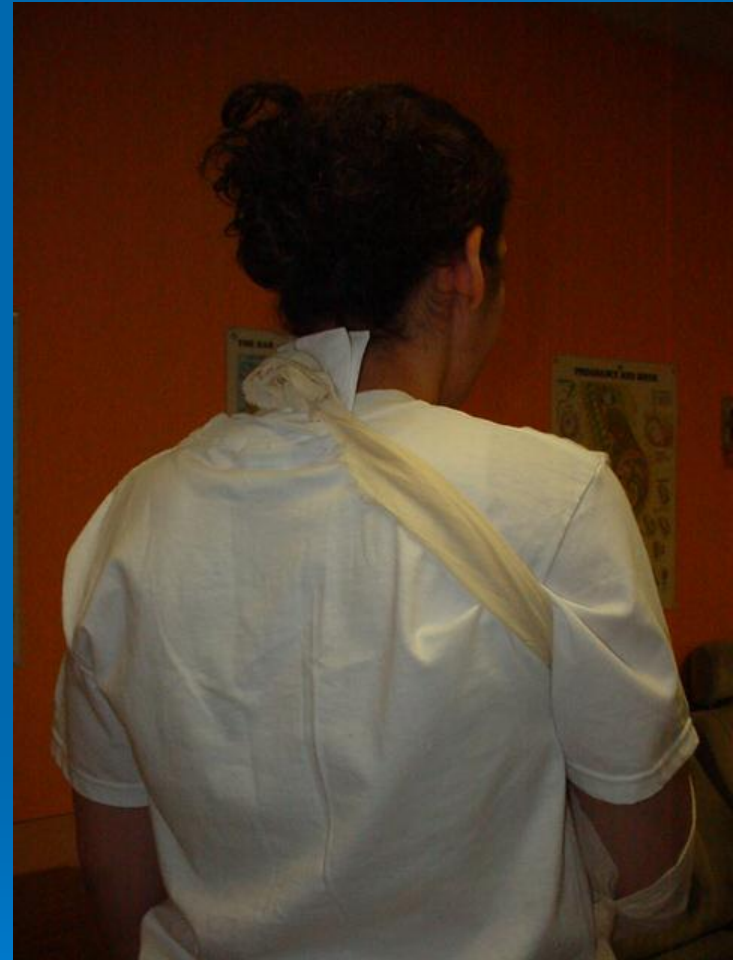
Bring the lower tail over the shoulder of the injured arm, take in any slack, and tie-off on the un-injured side (knot should never be on the spine)

*Modified Sling and Swathe  
for Clavicle or Shoulder*





# Modified sling for clavicle/shoulder



Bring the lower tail *under* the arm and across the back,  
and tie-off on the un-injured side

# Swathe



Using a wide cravat, start with the center of the swathe on the distal 1/3 of the humerus of the injured arm and draw the tails to the opposite side. Tie off under the arm.

# Swathe



Options include a second swathe placed mid-shaft,  
and/or using narrow (3") cravats

*Wide Cravat and Swathe  
for Clavicle or Shoulder*





# Wide cravat for clavicle/shoulder



Using a wide cravat, cup the elbow in the center and support the forearm, tie at the neck



Finish with swathes

# *Wrist Sling for Upper Arm*





## Wrist sling for upper arm



Center a narrow cravat at the wrist, twist the tails and tie off at the neck on the un-injured side.

# *Forearm Splint*



# Forearm Splint



Bring arm into sling position; Check perfusion, motor and sensory function while assistant stabilizes the injury.

# Forearm Splint



Have assistant hold splint in position.  
Use roller bandage or bulky dressing to  
maintain position of function.

# Forearm Splint



“Position of function” is a *natural, relaxed position* of the hand – as if resting on a grapefruit.

The patient should NOT be instructed to grasp or hold the padding as this creates an unnatural position and puts stress on the injury site by using muscles attached to the broken bone.



# Forearm Splint



Start with center of cravat on the splint, 2-3" above injury.  
Wrap both tails snug and tie off on the splint.



# Forearm Splint



Secure next cravat 2-3" below injury. Then secure hand to splint. This immobilizes the injury site and one adjacent joint (the wrist).

# Forearm Splint



Option: Use one cravat to secure below the injury *and* the hand

# Forearm Splint



Apply a sling to immobilize the other adjacent joint (the elbow). Because the injury is distal to the elbow, it should be elevated (no more than  $45^\circ$ ). A swathe may provide additional support.

# Forearm Splint



Check perfusion, motor and sensory function.

# *A-frame for Elbow*



# A-frame for Elbow



Check perfusion, motor and sensory function while assistant stabilizes the injury.



# A-frame for Elbow



Prepare the splint, padded side down, with 2 cravats centered on the splint.

# A-frame for Elbow



Position the splint so that it contacts the arm as close to the shoulder and wrist as possible.

*Note: All tails are inside*

## A-frame for Elbow



While your assistant stabilizes the splint and arm, bring the tails of the cravat closest to the shoulder snug around the arm and tie-off on the splint.

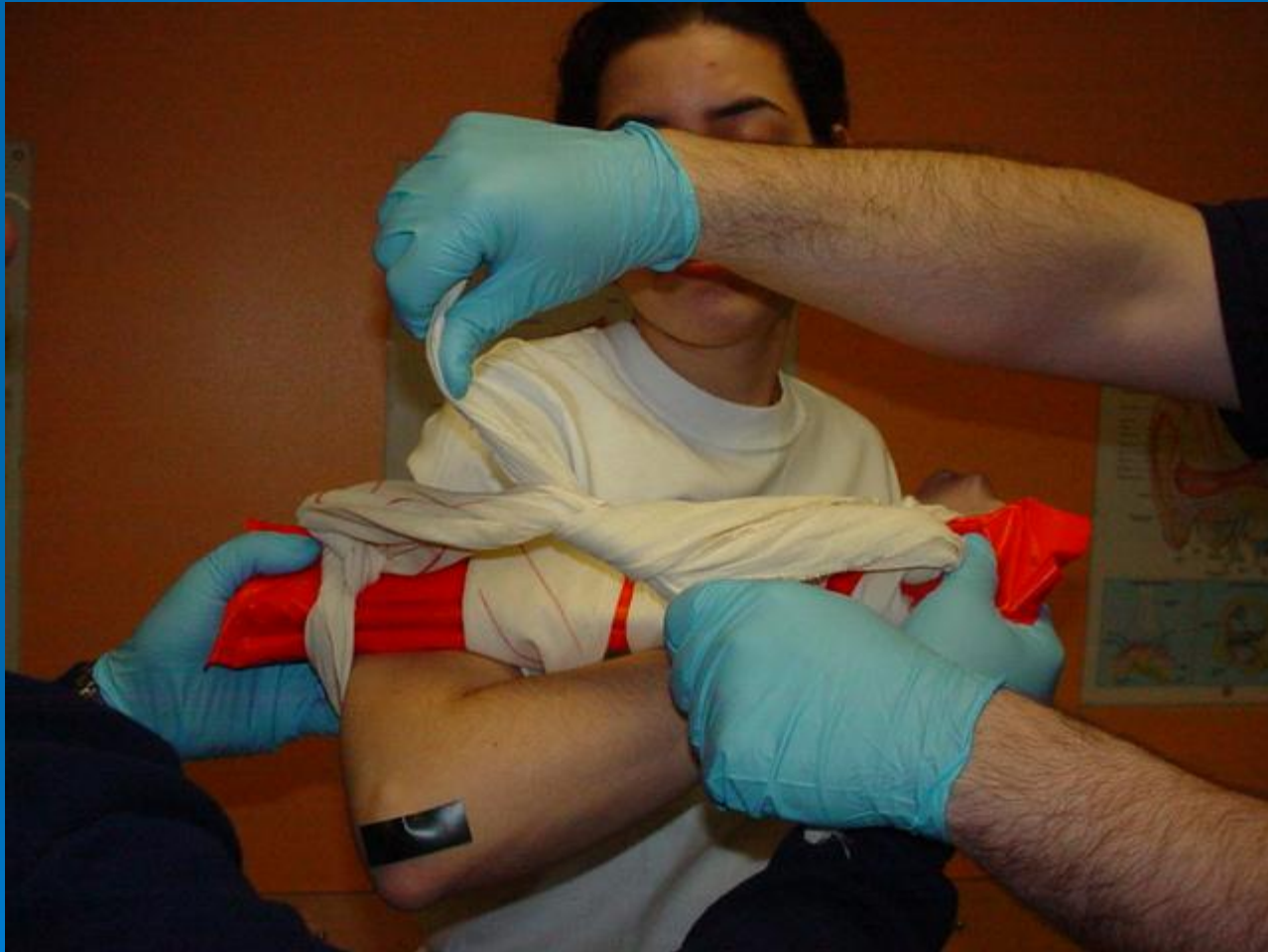


## A-frame for Elbow



While your assistant continues to stabilize the splint and arm, secure the other cravat the same way. Your assistant should also ensure that the knots do not slip off the ends of the splint.

# A-frame for Elbow



Tie the two sets of tails together to prevent them from slipping off the ends of the splint.

# A-frame for Elbow



Secure the arm using a wrist sling and swathe.  
Ensure that the swathe is on the distal 1/3 of the humerus  
without aggravating the injury.



# A-frame for Elbow



Check perfusion, motor and sensory function.

# *A-frame for Knee*



# A-frame for Knee



Remove the shoe and sock.  
Check perfusion, motor and sensory function  
while assistant stabilizes the injury.

# A-frame for Knee



With the patient supine, sandwich the leg between 2 medium board splints, positioned as close to the hip and ankle as possible.



# A-frame for Knee



Tie the boards together in the center (behind the knee)  
with one cravat



# A-frame for Knee



Tie the boards together over the thigh.

# A-frame for Knee



Tie the boards together over the shin.

# A-frame for Knee



Secure the foot to immobilize the ankle.



# A-frame for Knee



Check perfusion, motor and sensory function.

# *Tib/Fib Splint*





# Tib/Fib Splint



Remove the shoe and sock.  
Check perfusion, motor and sensory function  
while assistant stabilizes the injury.

# Tib/Fib Splint



Have your assistant maintain stabilization of the injured leg by supporting the splints. Fill any voids with dressings or other padding as necessary.

# Tib/Fib Splint



Secure the foot and ankle last.  
Position the center of the cravat at the heel.  
Bring the tails around the splints and cross below the foot.



# Tib/Fib Splint



Bring the tails around the foot and tie-off on the bottom of the foot.

# Tib/Fib Splint



Check perfusion, motor and sensory function.



Questions?

Comments?

Discussion?

