

# Appalachian Search and Rescue Conference

## Patient Record Form

Version 1.0, executive implementation by ASRC Chair Don Scelza 1/17/16  
Comments to Keith Conover <kconover@pitt.edu>

### Background

This document describes the standard ASRC Patient Record Form. This is a “best practice” available to Groups to use if they wish. Groups could also develop and use their own forms, provided they gather appropriate information and submit a copy to the ASRC Medical Committee.

Keeping patient records is a generally good thing. It helps those caring for the patient later on in the patient’s course. It can help us plan better for future medical and first aid needs if we review them for patterns. It can help us improve care by using actual patient interactions as teaching tools (“Quality Improvement”).

Creating a good patient record during a search and rescue operation is hard. As a result, patient records from search and rescue medical incidents generally aren’t very good.

Within AMRG (the ASRC’s Allegheny Mountain Rescue Group) we decided to do something about this. Given the context for charting, we decided not to have high expectations. We simply wanted a field patient record system that wasn’t terrible. Meaning that it fulfilled all the needs for a patient record, even if not all that well. (Sort of like Google’s “Don’t be Evil.”)

We considered doing a cellphone app, sending information back to a central server. Given the number of technophiles and computer-science

people in AMRG, it seemed like a fun project. But then we realized the downsides:

- No connectivity in caves.
- No connectivity in deep valleys.
- Cellphones are sort of fragile and don’t like getting wet; waterproof cellphone cases make them very klunky to use.
- Cellphones don’t work well in deep winter.
- Cellphone screens are hard to see in bright summer sunlight.
- Speech recognition on phones makes narratives easier, but doesn’t work when there’s poor connectivity, or lots of noise.
- We really need to give a copy of the medical record when we turn the patient over to “street” EMS, and nobody wanted to meet this need by giving away their cellphones.

AMRG reluctantly abandoned the idea of a cellphone app, with the option to revisit it at some point. We decided to go with pen and paper.

## Patient Record Form Functions and Characteristics

This is what AMRG came up with:

- Small: Fits in a cargo pocket, big shirt pocket, or parka pocket.
- Big: big enough to reasonably write on.
- Light.
- Durable.
- Works in rain and snow. (Need water-resistant paper).
- Should be 2-part “NCR set” forms so that you can make two copies at the same time, one to keep and one to give to “street” EMS, and the binder should have a solid backing so the yellow copy is legible.
- Should have mnemonics with it, either on the forms themselves or on a separate page, to help remind us how to do good medical charting.
- Should follow principles of good forms and good information design, as expressed in *Forms for People*<sup>1</sup> and the work of Yale’s Edward Tufte.<sup>2-6</sup>
- Can add additional reference pages for not only medical reference material, but also generic SAR references.

## Considerations

### Paper

We looked into water-resistant and waterproof paper. You can get plastic “paper” that is entirely waterproof, sort of like Tyvek. Both Rite-in-the-Rain and Relyco (Revlar) make it. However, nobody makes it in 2-part NCR-set forms, which we really, really need. So for now, we’re stuck with using the Rite-in-the-Rain wax-

impregnated water-resistant paper if we want NCR-set 2-part forms.

### Binder

We considered using the Rite-in-the-Rain binder that many have used for cave surveying and have found very, very sturdy. It’s model #210, is 5-5/8”x7-1/2” and takes Franklin-Covey style pages or paper punched by a Franklin-Covey style hole punch (widely available). It takes 4”x6.5” loose-leaf paper. People liked the sturdiness but thought it too big and bulky to be practical.

We also considered a quick-and-dirty but much smaller notebook made out of two pieces of plastic, cut to slightly larger than 4”x6” and bound at the bottom with some duct tape. The pages would be connected to the binder with a single binder ring in the top right. (See the diagrams far below.) When, at an AMRG meeting, we passed around the yellow 3-ring binder and the kludge with two bits of plastic and duct tape, the membership unanimously preferred the version with duct tape. When we later passed around Ben’s prototypes, they got an even better reception:

AMRG’s Ben McCandless developed a prototype more elegant flat “checkbook.” Prototypes were distributed to Group representatives at the 2015 Retreat, and pictures of it are in this PDF portfolio. It:

1. Is tougher.
2. Provides a secondary storage area in the rear for completed forms.
3. Has been laser-engraved with the AMRG logo.

Development is continuing, and at the 2016 Retreat, Ben had about 70 of the Mark II

version, slightly improved. He is already working on Mark III, which, since this is now officially the ASRC Patient Record notebook, will bear the ASRC logo.

### *Mnemonics and Reminders*

We finally decided on a mixed strategy as far as mnemonics and reminders. Reminders for the most essential information will be on the forms themselves, but more detailed mnemonic will be on separate pages. This would allow people to select pages with those mnemonics they felt most useful, or make up their own. (We encourage those who make up their own to share.)

### *Information Design*

We carefully reviewed the principles of forms design; see, for example:

<http://ed-informatics.org/2010/02/11/medical-computing-9/>

and

<http://ed-informatics.org/2010/04/12/tracking-systems-part-6>

and selected the following to apply to our work:

- Emphasize the information we're entering, not the explanatory text or lines.
- In writing areas, deemphasize the lines so that the text is more visible.
- Leave lots of room for free writing, using prompts outside the writing area to indicate what needs to be written, unconstrained by boxes. Given there isn't much room on a small page, need to be flexible to accommodate different charting needs.

- Make checkboxes big enough to enclose an X or checkmark.

### *Data Items*

We made up a list of data we want to capture:

- Reminders for important stuff, including "Page # of #". This requires a bit of training; you fill in the "page" number as you start a new page, and the "of" number once it's all done.
- Patient ID information. We decided (after quite a bit of discussion) that, given that space is at a premium, subsequent pages could have just a name and a page number.
- On the first page, date and time. On subsequent pages, patient name and time, but no date. We figured (after much discussion) it will not be a problem to get pages in order after the fact, as long as we have name and time. Having page number will make it that much easier.
- The more detailed elements of a history that may be appropriate in the backcountry.
- A time-saving checklist with the elements of clearing the cervical spine in the field by protocol. Note: you might be able clear the cervical spine even if a patient doesn't meet all these criteria, with medical direction from a physician.
- Additional pages for generic timed entries (especially important for many-hour cave rescues).
- No rigid blocks for vital signs and physical exam reassessment. Instead, there should room for time and whatever you want to write. For example, if you wrote:

**1230 hrs 140-22-110/70-93%RA**  
anyone could probably figure out  
which vital signs are which.

### *Holes*

One of the advantages of using a system with a single hole in the top left is that there only needs to be a single hole in the pages; this leaves more room for writing.

### *Homunculi*

We discussed the possibility of using a homunculus (diagram of a body) initially as aid for a cellphone app, but later as part of a paper charting system. This email excerpt addresses this:

I have a lot of experience with medical charting software, indeed have a website devoted to the usability of medical software which features charting software:

<http://ed-informatics.org>

I've used and analyzed a lot of medical charting software, some using the homunculus approach you suggest. While it's visually attractive, the vast majority of users find it doesn't help. Narrative text with an occasional drawing seems to work much better, and ends up being the user's choice.

For example, I am at MedExpress right now, and in front of me I have a computer with DocuTAP on it, the charting system that is used here.

One of the screens offers a homunculus to click to select a template (sore throat, ankle injury, etc.), and then a simple multicolumn list of templates to click as an alternative method to choose.

I have yet to find a single person who uses the homunculus, and that's about 40 people I've surveyed.

In DocuTAP, small anatomic diagrams on which you can draw with the mouse are available, and about 5-

10% of the people use this. But most just use text, using standard anatomic terminology ("5x3 inch partial thickness burn R anterior shin") as it's faster and easier. Maybe on a phone, using your finger, we could get more efficient drawing, and it might be more attractive, as I would think that people can draw better with a finger than a mouse. On the other hand, phone screens are small, and your finger covers up what you're drawing.

So in practice, homunculi seem to take up space on the screen but not offer much if any advantage to text. But it looks great on your webpage when you're trying to sell a charting product.

### **References**

1. Barnett R. Forms for people: Designing forms that people can use. Canberra, Australia: Robert Barnett and Associates Pty Ltd; 2005.
2. Tufte ER. Envisioning Information. Cheshire, CT: Graphics Press; 1990.
3. Tufte ER. Visual explanations : images and quantities, evidence and narrative. Cheshire, Conn.: Graphics Press; 1997.
4. Tufte ER. The visual display of quantitative information. 2nd ed ed. Cheshire, Conn. (Box 430, Cheshire 06410): Graphics Press; 2001.
5. Tufte ER. The cognitive style of PowerPoint : pitching out corrupts within. 2nd ed. Cheshire, Conn.: Graphics Press; 2006.
6. Tufte ER. Beautiful evidence. Cheshire, Conn.: Graphics Press; 2006.

Cut 1: 7.5"

<b>1</b>		Name, age, sex, date of birth, weight:
Page	of	
Date/time		



Field **Physical:** Deformities, Open inj., Tenderness, Swelling toms, Allergies, Meds, Last meal, Events eading to problem.

**Diagnoses**

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**Hx:** Chief Compl., Hx of Present Illness, Past Medical Hx (allergies, meds), Family/Social Hx; **SAMPLE:** Signs and Symptoms

**VS:** pulse, respirations, BP, temp, O<sub>2</sub> sat.

**C-spine Clearing:**

Alert, no intoxication

No distracting injury

No neck pain

No neck tenderness

No numbness, tingling, weakness

Normal motor and sensory exam

Painless range of motion of neck

reason for clearing? \_\_\_\_\_

time cleared? \_\_\_\_\_

who cleared? \_\_\_\_\_

Cut5: 5"

Cut6: 1"

<b>2</b>		Name: _____
Page	of	
Time: _____		Notes:



**Treatment:** protocol? standing orders? medical direction/physician present? physician present? distance, evac priority, evac time.

**Common re-exams:** level of consciousness, distress/pain, skin, lungs, abd, input, output, times, cert levels.

**Scene:** weather, terrain, resources, Medics: names, \_\_\_\_\_

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Cut2: 6.5"

Cut3: 10"

Cut4: 6"

Page	of
Time:	Notes:

Name: \_\_\_\_\_



Notes section with horizontal dotted lines for writing.

Page	of
Time:	Notes:

Name: \_\_\_\_\_



Notes section with horizontal dotted lines for writing.

## **Allegheny Mountain Rescue Group**

### **Patient Record Binder Mark I**

Design and production by Ben McCandless

Pictures and document 3/9/15 by Keith Conover



**Figure 1: Assembled binder showing cover.**

A single binder ring attaches the sheets to the binder. The AMRG logo is laser-etched. I have played with it a bit: I rubbed an orange grease pencil back and forth across it and then wiped off the excess. Note the hole in the front cover has a slit in it so the cover can be detached from the binder ring.



**Figure 2: Cover opened.**

You can unsnap the cover from the binder ring, then insert your thumb to hold the cover open, exposing the Patient Record Forms.



Figure 3: Patient Record Form flipped over onto cover, ready for writing.

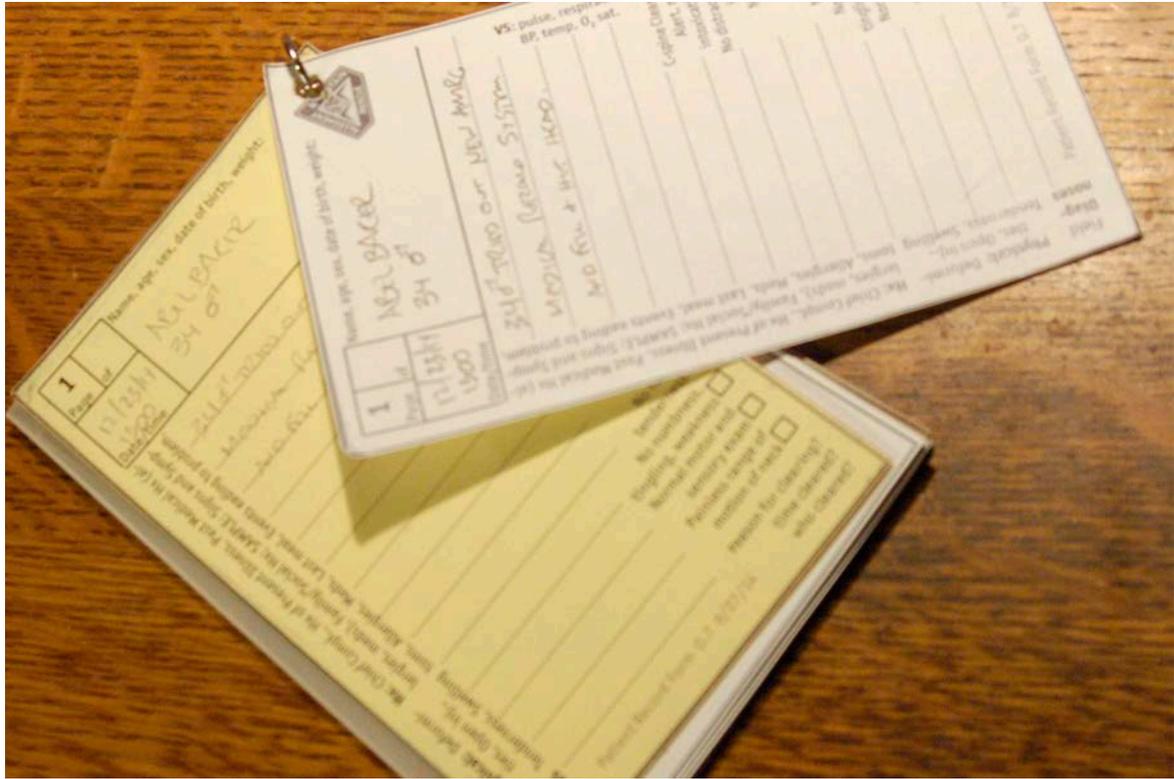
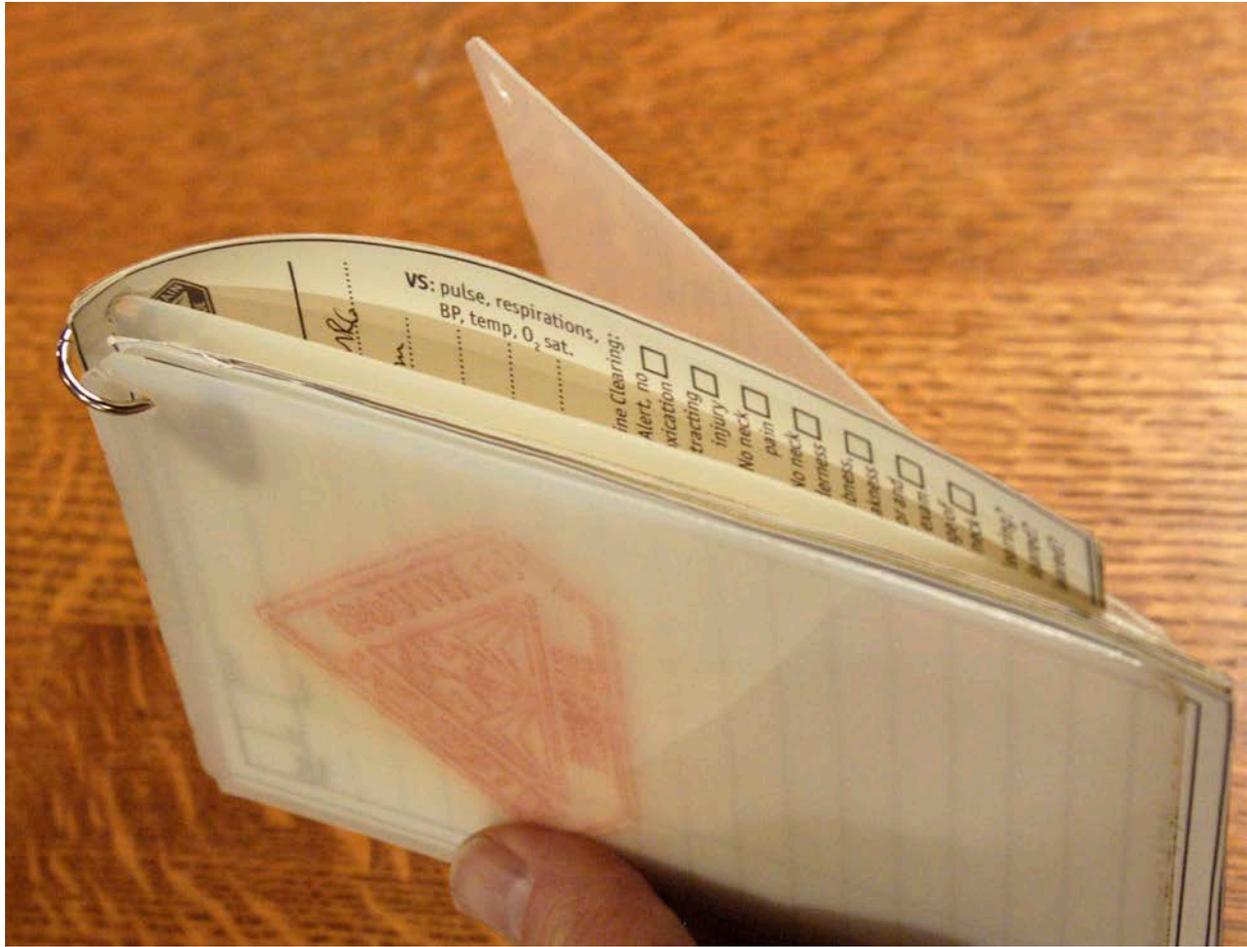


Figure 4: showing the 2-part NCR set Rite-in-the-Rain forms.



**Figure 5: Storage in Back.**

The back cover may be hinged away, providing storage for completed Patient Record Forms.

The following pages represent optional reference material that may be added at the back of a stack of forms in the ASRC Patient Record notebook. These pages could be printed on more durable waterproof plastic paper, rather than Rite-in-the-Rain paper. Unfortunately, plastic paper 2-part sets are not available.

## Medical Reporting Format

**Team Identifier** (“Team Alpha”)

**Medic Name** and level of training

**Chief Complaint**

**History**

- History of Present Illness
- Past Medical History
- Medications
- Allergies

**Physical Exam**

**Field Diagnoses** (or problem list)

**Scene**

- Weather
- Terrain
- Resources
- Prior Treatment
- Evacuation Time Estimate

**Evacuation Priority**

- Hasty (Very Urgent) or
- Urgent or
- Routine or
- Delayed (Bivouac)

**Treatment Now**

**Plans** for Possible Problems During Evacuation

Inspired by the teachings of the Wilderness EMS Institute (WEMSI)

**“Clearing the C-Spine”** (NEXUS Criteria, direct quote)

- absence of tenderness at the posterior midline of the cervical spine
- absence of a focal neurologic deficit
- normal level of alertness
- no evidence of intoxication
- absence of clinically apparent pain that might distract the patient from the pain of a cervical-spine injury

**Shoulder Dislocations**

- Check and document distal CMS/NVI incl. “patch area” and forearm.
- Can pt. bring affected hand to opposite shoulder? If so, unlikely is shoulder dislocation.
- Palpate for deformity: AC sprain? Humerus fx?
- Pain medications, muscle relaxants, suggestion, or hypnosis; ask patient to relax muscles
- Stimson method: face down on ledge/table, padding under shoulder at edge; attach weight to elbow or wrist and monitor for neurovascular impairment from weight; use other method if no results in 30 minutes.
- Milch technique: traction upwards.

**Emergency Water Disinfection**

- if dirty, flocculate (alum or white campfire ash)
- 8 drops Betadine(r)/L for 30 minutes; use more or
- leave longer if dirty or very cold water
- 4 cc of Clorox 5% bleach for 40 L (10 gallons) overnight; double if have to use in an hour

## Neurological Exam

- **Mental Status**

- **Cranial Nerves:**

- “How many fingers?” [CN II, optic: **vision**]
- “Look up, look down, look right, look left.” **EOMI** (ExtraOcular Motions Intact) [CNs III, IV, VI, oculomotor, trochlear, abducens: move eyes in all directions]
- “Close your eyes and say ‘now’ when you feel a touch.” {forehead, cheek, chin}) [CN V, trigeminal: bilateral **face sensation**]
- “Smile; raise your eyebrows.” [CN VII, facial: bilateral **face strength**]
- “Which side do you hear the sound on?” {rub fingers next to ear, then other} [CN VIII, auditory: **hearing**]
- “Hold your shoulders up.” {press down on shoulders} {alternate: have patient turn head against resistance} [CN XI, accessory: **elevates shoulders**, turns head side to side]
- “Stick out your tongue” {**tongue** in midline?} [CNXII, hypoglossal: protrudes tongue]
- Not tested: CN I, olfactory: smell; CN IX, glossopharyngeal: sensation back of throat; CN X, vagus: parasympathetic to internal organs

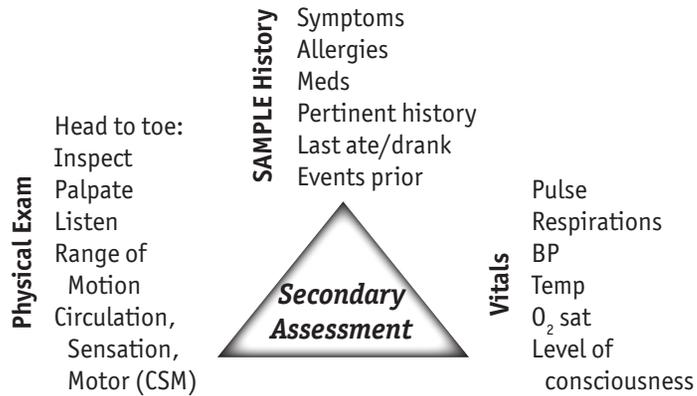
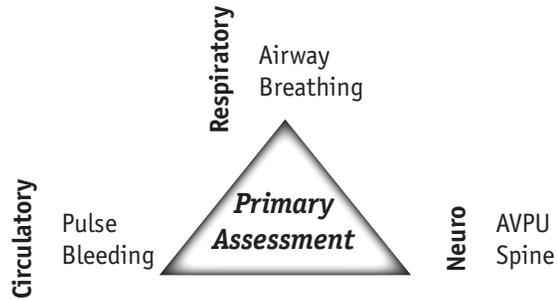
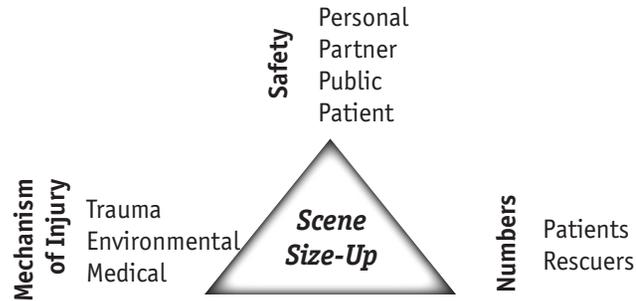
- **Sensory:** light touch, pinprick

- **Motor:** strength

- **Deep Tendon Reflexes:** forearm [brachioradialis], elbow [biceps], knee jerk [patellar], ankle jerk; also response to stroking lateral sole (“Babinski”: normal is down > 1 yr. old.)

- **Cerebellar:** “finger -> nose,” “heel -> shin,” gait (“Walk a straight line, heel to toe.”)

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Inspired by the teachings of Wilderness Medical Associates (WMA)

## Appalachian Search and Rescue Radio SOP Crib Sheet

Draft 3.0 2/17/15 For Internal ASRC Use Only

### Identification

- Calling another station: give that station's call, **followed by** yours. "**Base, this is Team Delta...**"
- When ending a conversation, give your call and then the proword **clear**. "...**Team Delta clear**."
- **Base** announces time & license call sign on each half hour.
- In convoys, the **Leader** also announces the call sign at least every 30 minutes. When no **COMCTR (Base)** is operating, or no mobile station has been designated **Leader**, and always on CB, you must give the license call sign at the beginning and end of each conversation.

### ASRC Callsigns

- Public Safety: **WPEZ758**
- Business: **WQEU871**
- The COMCTR is **Base**.
- The lead vehicle in a convoy is **Leader**.
- The DO is **Dispatch** preceded by a Group name (e.g., **Blueridge Dispatch**).
- Your field team uses its letter designator, e.g., **Team Alfa, Team Bravo**.
- If your team is tasked as a relay, you identify as **Relay** rather than Team, e.g., **Relay Alfa, Relay Bravo**.
- Within a team, you use functional titles followed by your team's letter, e.g., **Leader Alfa, Rescue Alfa, Medic Alfa, Radio Alfa**. Or, **Left Wing Alfa, Brake Alfa, Haul Alfa**.
- If you are on a sub-team, or acting as a secondary radio operator, use your team letter plus a number, e.g., **Charlie Two**.
- If you are on staff in Base, use your ICS title or common abbreviation, e.g., **Ops, this is Plans. Comms, this is Logistics**.
- If you can't figure out a functional callsign, use your last name, e.g., **Jones, this is Smith**.

## International Telecommunication Union (ITU) Phonetic Alphabet

<b>A</b> Alfa* (AL fah)	<i>Numbers are spoken digit by digit except for multiples of 100 or 1000.</i>
<b>B</b> Bravo (BRAH voh)	
<b>C</b> Charlie (CHAR lee)	
<b>D</b> Delta (DELL tah)	<b>0</b> (ZE RO)
<b>E</b> Echo (ECK oh)	<b>1</b> (WUN)
<b>F</b> Foxtrot (FOKS trot)	<b>2</b> (TOO)
<b>G</b> Golf (GOLF)	<b>3</b> (TREE)
<b>H</b> Hotel (hoh TELL)	<b>4</b> (FOW er)
<b>I</b> India (IN dee ah)	<b>5</b> (FIFE)
<b>J</b> Juliett* (JEW lee ETT)	<b>6</b> (SIX)
<b>K</b> Kilo (KEY loh)	<b>7</b> (SEV en)
<b>L</b> Lima (LEE mah)	<b>8</b> (AIT)
<b>M</b> Mike (MIKE)	<b>9</b> (NIN er)
<b>N</b> November (no VEM ber)	<b>100</b> (HUN dred)
<b>O</b> Oscar (OSS cah)	<b>1000</b> (TOU SAND)
<b>P</b> Papa (pa PAH)	<b>16</b> One, Six
<b>Q</b> Quebec (keh BECK)	<b>20</b> Two, Zero
<b>R</b> Romeo (ROW me oh)	<b>35000</b> Three, Five, Thousand
<b>S</b> Sierra (see AIR rah)	<b>1800</b> One, Eight, Hundred
<b>T</b> Tango (TANG go)	<b>3664</b> Three, Six, Six, Four
<b>U</b> Uniform (YOU nee form)	<i>Light signals: use hand over source as shutter. Wigwag flags: flag to <b>sender's</b> right is dot, flag to <b>sender's</b> left is dash. Send <b>slowly</b>.</i>
<b>V</b> Victor (VIK tah)	
<b>W</b> Whiskey (WISS key)	
<b>X</b> X-Ray* (ECKS ray)	
<b>Y</b> Yankee (YANG kee)	
<b>Z</b> Zulu (ZOO loo)	

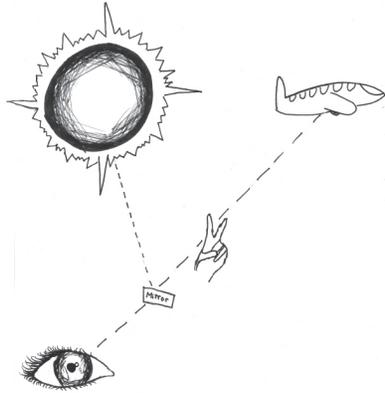
\* NATO Military Phonetic Alphabet spells thusly: Alpha, Juliet, Xray

<b>This is</b>	Precedes identification.
<b>Over</b>	It is your turn to transmit, I am listening.
<b>Go Ahead</b>	I am ready to receive your message.
<b>Roger</b>	I have satisfactorily received your message. <b>Does not</b> mean yes.
<b>Affirmative</b>	Yes.
<b>Negative</b>	No.
<b>Stand By</b>	Wait a moment (other stations keep out).
<b>Clear*</b>	I have no more traffic, but I will be listening.
<b>Out*</b>	I am turning off my radio.
<b>Say Again</b>	Repeat your last transmission. <b>Do not</b> say "repeat": means another artillery barrage.
<b>I Say Again</b>	I will repeat what I have just said (or last transmission).
<b>Say Again —</b>	Asking last station to repeat the indicated specific information.
<b>Correction</b>	I have made an error; what follows is correct.
<b>Prepare to Copy</b>	Write this down. (Wait for <b>Go Ahead</b> before sending message.)
<b>Read Back</b>	For verification, read back the message I just sent you.
<b>I Read Back</b>	I am reading back your message for verification.
<b>That is Correct</b>	I verify that you have received or relayed my message correctly.
<b>Spell</b>	Spell out your message with phonetics.
<b>Spell —</b>	Spell phonetically the indicated specific information.
<b>I Spell</b>	A phonetic spelling follows.
<b>Figures</b>	Numerals and letters follow which do not spell words.
<b>Secure the Net</b>	Protect following radio traffic. Sensitive information to follow.
<b>Clear the Net</b>	All stations cease transmission. Priority traffic to follow.
<b>Status One</b>	Subject found; alive and well.
<b>Status Two</b>	Subject found; alive, needs evacuation.
<b>Status Three</b>	Subject found; dead.

\* NATO Military and some dispatchers use **Out** to mean the same as the ASRC's **Clear**.

Message	Whistle	Light	Voice	Hands	Flags	Lights
Trouble/ Help	— — —		Help Help Help			Waving to get attention
Status One	— ●		Hey One			Don't Cross Touchdown
Status Two	— ● ●		Hey Two Two			Similar to Trouble
Status Three	— ● ● ●		Hey 3 3 3			Cross and Uncross Dead Ball
Come to Me/ Send Evac Team	● —		Come Heeere			Roll
Don't Come to Me/Don't Send Evac Team	● ● —		Don't Come Heeere			Wave Away
Affirmative	— ● — ●		Morse Code C			Nodding
Negative	— ●		Morse Code N			Shaking
Rope: Stop	—		Stop!			Stop all movement until further instructions. (ASTM 1768)
Rope: Up	● ●		Up! Up!			Moving towards anchor, or needs to move towards anchor. (ASTM 1768)
Rope: Down	● ● ●		Down! Down! Down!			Moving away from anchor, or needs to move away from anchor. (ASTM 1768)
Rope: Free	● ● ● ●		Free! Free! Free! Free!			At the end of a climb, rappel, raise, or lower. (ASTM 1768)

- A      ··· S
- B      - T
- C      ··· U
- D      ···· V
- E      ·- W
- F      ··· X
- G      ··· Y
- H      ··· Z
- I      ··· 0
- J      ··· 1
- K      ··· 2
- L      ··· 3
- M      ···· 4
- N      ···· 5
- O      ···· 6
- P      ···· 7
- Q      ···· 8
- R      ···· 9



Use two fingers in a V to form a sight. Line up eye, mirror, fingers and aircraft. Move mirror back and forth so you see the light flashing across the bottom of your finger-sight. On real operations, ASRC members have successfully signaled a aircraft using just the blade of a Swiss Army knife as a signal mirror.

<b>I</b>	<b>  </b>	<b>X</b>
Serious Injury	Require Meds	Unable to Proceed
<b>F</b>	<b>K</b>	<b>→</b>
Require Food and Water	Indicate Direction to Proceed	Am Proceeding This Direction
<b>△</b>	<b>LL</b>	<b>N</b>
Safe to Land Here	All is Well	Negative
<b>Y</b>	<b>JL</b>	<b>└</b>
Affirmative	Not Understood	Wind Direction
<b>□</b>	<b>!</b>	<b>↔</b>
Require Map and Compass	Require Comms Equipment	Affirmative
		
Negative	Understood	Not Understood

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**SAMPLE** history

Symptoms  
Allergies  
Meds  
Pertinent history  
Last ate/drank  
Events prior

**BCLS**

Circulation  
Airway  
Breathing

**3 Hs**

Hypothermic  
Hungry  
deHydrated

**AVPU Mental Status**

Alert  
Verbal response  
Pain response  
Unresponsive

**Military MARCH 1° Survey**

Massive hemorrhage  
Airway  
Respiration  
Circulation  
Head trauma/Hypothermia

**Signs of Trauma**

Deformities  
Open injuries  
Tenderness  
Swelling

**Pelvic Binder IF** suggestive mechanism of injury AND ONE OF

- Hemodynamically unstable,
- Pulse >100 and systolic blood pressure <90,
- GCS <13 (decreased level of consciousness),
- Distracting injuries present, OR
- Patient complaining of pelvic pain.

**Signs of Trauma**

Deformities  
Contusions  
Abrasions  
Punctures/Penetrations  
Burns  
Tenderness  
Lacerations  
Swelling

**Peds ABC Triangle**

Airway & Appearance  
(Open/Clear – Muscle Tone /Body Position)  
Work of Breathing  
(Visible movement/ Respiratory Effort)  
Circulation to Skin  
(Color/Obvious Bleeding)

**SOAP** note

Subjective  
Objective  
Assessment  
Plan

**Swiss Hypothermia Grading, and Treatment Guidelines**

**HT I:** Conscious, shivering

- Typical core temp: 35-32°C (95-90°F)
- Warm environment and clothing, warm sweet drinks, active movement.
- May be treated in field and released per medical command or per Group protocols.

**HT II:** Impaired consciousness, not shivering

- Typical core temp: 32-28°C (90-82°F)
- Avoid movement or head-up position, insulate, aggressive rewarming (hot packs, charcoal vest), warm IV fluids, warm humidified air or O<sub>2</sub> and cardiac monitoring.
- If SBP <90 mm Hg, or ventricular arrhythmias, or core temp <28°C (82°F), try for air transport to tertiary care hospital with cardiac bypass/ECMO (extracorporeal membrane oxygenation) capabilities.

**HT III:** Unconscious, not shivering, vital signs present

- Typical core temperature 28-24°C (82-75°F)
- Manage as per HT II, above, plus: if needed, invasive airway.
- If possible, air transport to tertiary care hospital with cardiac bypass/ECMO (extracorporeal membrane oxygenation) capabilities.

**HT IV:** No vital signs (check for **60 seconds** for pulse)

- Typical core temp: <24°C (<75°F)
- Do not attempt/cease resuscitation (consult medical command if possible) if:
  - obvious signs of irreversible death
  - CPR not possible during evacuation, or unsafe for team
  - valid DNR order
  - avalanche burial ≥ 35 minutes, airway packed with snow, and asystole on monitor
- Manage as per HT II and III, initiate standard CPR
- May interrupt and resume CPR if needed during evacuation, as may survive despite pauses in CPR; might survive hours of basic CPR.
- IV or IO access, up to 3 doses of 1 mg of epinephrine IV or IO, and defibrillate up to 3 times.

## Nontechnical and Semi-Tech Evac Calls

**CLEAR!** A call by **THE BELAYER** during semi-tech evacuations, uphill or downhill: the rope is clear of the tree or belay device and ready to switch over to the next tree or belay device.

**DOWN FAST!** Lower the litter down somewhat faster. Usually a call from **THE LITTER CAPTAIN** to **THE BELAYER**. **THE BELAYER** echoes.

**DOWN SLOW!** Lower the litter down slowly. Usually a call from **THE LITTER CAPTAIN** to **THE BELAYER**. **THE BELAYER** echoes. *Whistle equivalent: 2 Short Whistles (NCRC standard: "Down," ASTM rope rescue standard: "Down")*

**FALLING!** I am falling, or the litter is falling.

**FORWARDS!** From **THE LITTER CAPTAIN** to the litter team: start carrying the litter forwards.

**HAUL!** Pull on the haul line. Call from the member who has just reset the haul Prusik to the haul team. *Whistle equivalent: 2 Short Whistles (NCRC standard, ASTM rope rescue standard: "Up")*

**LADDER!** In the context of toenailing a litter up a short steep bit, or across an obstacle, from the new **LITTER CAPTAIN** to the litter team: keep your feet planted, and lift the litter a short distance up the hill or across or around the obstacle to where the two new litter bearers can grasp the litter rail.

**OFF BELAY!** From **THE LITTER CAPTAIN**, or a climber, or a rappeller, to **THE BELAYER**. I no longer need to be belayed. Paired with a call from **THE BELAYER: BELAY OFF!** (**THE BELAYER** always says the word **BELAY** first.)

**OFF ROPE!** I am no longer attached to

the rope. May be qualified, such as **OFF ROPE RED!** or **OFF ROPE LINE 3!** May be used after a rappel, an ascent, or after being belayed.

**ON BELAY!** From **THE LITTER CAPTAIN**, or a climber, or a rappeller, to **THE BELAYER**. I am attached to the belay rope and ready to be belayed. Not a question. Paired with a call from **THE BELAYER: BELAY ON!** (**THE BELAYER** always says the word **BELAY** first.)

**ON ROPE!** I am attached to the rope. May be qualified, such as **ON ROPE RED!** or **ON ROPE LINE 3!** Used mostly for rappelling and ascending.

**ONE-OH!** In the context of a downhill semi-tech evac, from **THE BELAYER** to **THE LITTER CAPTAIN** and **THE DOWNHILL ROPEHANDLER**; you've got about 10' (3 m) of rope left.

**PRELOAD!** In the context of a downhill semi-tech evac, from **THE LITTER CAPTAIN** to **THE BELAYER**; do not let any rope slip as we load the rope. **THE BELAYER** echoes.

**READY! [PAUSE] DOWN!** Prepare to lower; sound off if not ready; pull out and squat to gently set the litter down.

**READY! [PAUSE] LIFT!** Prepare to lift; sound off if not ready; pull out to lift up the litter.

**READY TO LADDER!** In the context of toenailing a litter up a short steep bit, or across an obstacle, from **THE LITTER CAPTAIN** to the litter team: front four bearers, plant your feet, shift your hands back a bit, and the back two bearers peel off and move up the hill or across or around the obstacle to the head of the litter.

**READY TO ROTATE!** During a nontechnical evacuation, from **THE LITTER**

**CAPTAIN** to the next set of relief bearers: step off the trail and be ready to grab the back of the litter when we come through.

**RESET!** Drop the haul line and move the Z-haul Prusik back toward the load. Call from the member who checked that the ratchet Prusik has gripped the rope to the rest of the haul team.

**ROCK!** Something is falling; something other than me (see **FALLING!**). All echo.

**ROPE!** I am casting a rope over a cliff or into a pit. Watch out, and also if you can, check to see if the rope made it all the way to the bottom.

**ROTATE!** During a nontechnical evacuation, from the new back-left litter bearer to the litter bearers ahead: I and my partner have hold of the litter and it's time to start shifting forwards on the litter.

**SET!** Gradually release tension on the Z-haul line until the ratchet Prusik is engaged. Call from the member best able to see that the team can make no more progress.

**SLACK!** Let out some rope. May be quantified as, for example, **SLACK ONE FOOT!** **THE BELAYER** echoes. (Sometimes used instead of **RESET!** in cave rescue)

**STOP!** *Meaning 1:* In the context of a technical rescue or semi-tech evac, from anyone to everyone: major safety issue, everyone stop! Everyone echoes. *Whistle equivalent: 1 Short Whistle (NCRC standard, ASTM rope rescue standard)*

*Meaning 2:* In the context of a nontechnical litter carry, from **THE LITTER CAPTAIN** to the litter team: stop walking.

**STOP, STOP, WHY STOP?!** Why has

movement stopped? or, Why is progress delayed? Usually a question from **THE LITTER CAPTAIN** to **THE BELAYER**. Concern is that the lowering has stopped; the lowering rope has snagged, and a dangerous amount of slack may be developing in the upper portion of the lowering rope if **THE BELAYER** lets out more rope. Everyone echoes. Developed by the National Cave Rescue Commission but appropriate to above-ground rescues as well. The series of four words, even if the actual words cannot be made out, is an easily-recognizable call for a potentially fatal safety problem. *Whistle equivalent: 4 Whistles (not NCRC standard but should be)*

**TENSION!** Take any slack out of the line but don't lift or move the litter or climber. Usually a call from **THE LITTER CAPTAIN** or a climber to **THE BELAYER**. In technical rescue, may be **TENSION MAIN!** or **TENSION BELAY!** **THE BELAYER** echoes.

**TWO-OH!** In the context of a downhill semi-tech evac, from **THE BELAYER** to **THE LITTER CAPTAIN** and **THE DOWNHILL ROPEHANDLER**; you've got about 20' (6 m) of rope left.

**UP FAST!** Haul the rope/load up faster. Usually a call from **THE LITTER CAPTAIN** to the haul team. The response **NO <PANT> WAY!** is not an accepted call. The leader of the haul team echoes.

**UP ROPE!** From **THE LITTER CAPTAIN** or a climber: take in the belay rope; or, take in the belay rope faster if you can.

**UP SLOW!** Haul the rope/load up slowly. Usually a call from **THE LITTER CAPTAIN** to the haul team. The leader of the haul team echoes.

## Building Inspection and Urban Search and Rescue Markings



### STRUCTURE MARKING SYSTEM

Begin by using orange spray paint or lumber crayon to draw a 2-foot box. Then use the box to alert subsequent rescuers to building conditions or earlier findings.

- Damage is minor with little danger of further collapse. Structure is safe for search and rescue operations.
- Damage is significant. Shoring, bracing or removal of hazards is necessary.
- Structure is not safe for search and rescue operations. Remote search operations may proceed at significant risk. Safe havens and evacuation routes should be established.
- ← Direction to safely enter building.
- HM** Hazardous material is present. Type of hazard may also be noted.
- 8/15/95 0620  
HM=CLORINE  
CATF-2 Write date, time, hazardous materials present and team identification on the right-hand side of the box. For example, this building was searched Sept. 1, 1995, at 8a.m., chlorine was found, and the search was conducted by Los Angeles County CATF-2.

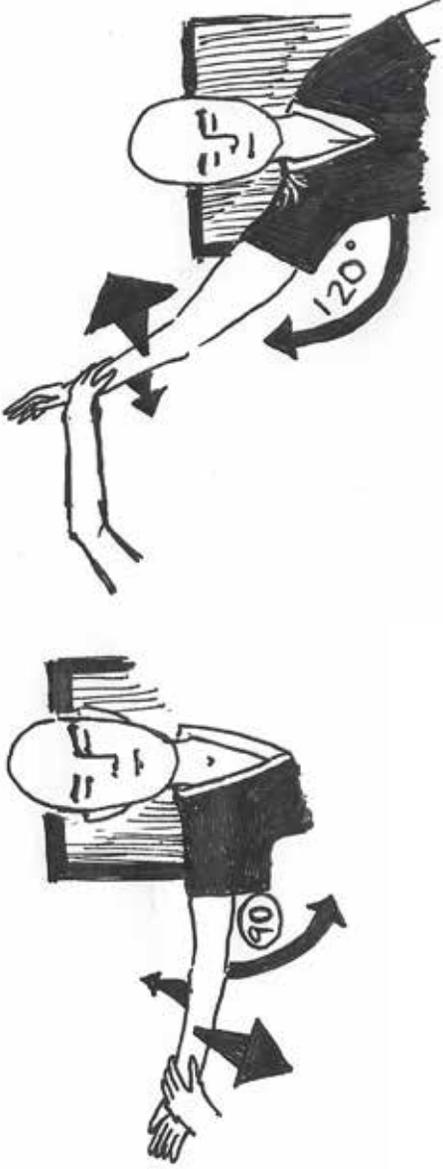
### SEARCH MARKING SYSTEM

- ↗ Search operations are currently in progress. (ORANGE)
- ✕ Personnel have exited the structure. (ORANGE)
- |                    |               |
|--------------------|---------------|
| 8/15/95<br>CATF-2  | HM<br>CLORINE |
| 11/15/95<br>1/1/98 |               |
- Left quadrant – Team identifier.
- Top quadrant – Time and date team left the structure.
- Right quadrant – Hazards found.
- Bottom Quadrant - Number of live and dead victims still inside the structure. *Written in Black Marker or lumber crayon/chalk*



### Shoulder Dislocation Reduction: Cunningham Technique

Patient's arm adducted (held close to chest), elbow at 90 degrees. Injured arm rests on rescuer's upper arm.  
 Apply minimal downward pressure.  
 Massage Trapezius, Deltoid, Biceps -> Repeat.



**Shoulder Dislocation Reduction: FARES (modified Milch)**

Apply gentle traction.

Start anterior-posterior oscillations

Slowly ABduct (move away from chest) to 90 degrees then externally rotate (rotate arm into the waving position).

Continue oscillations and abduction to 120 degrees.



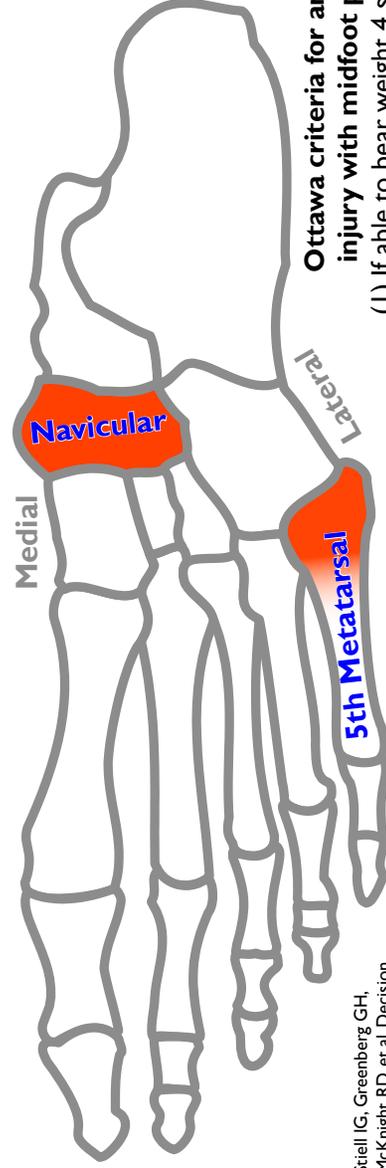
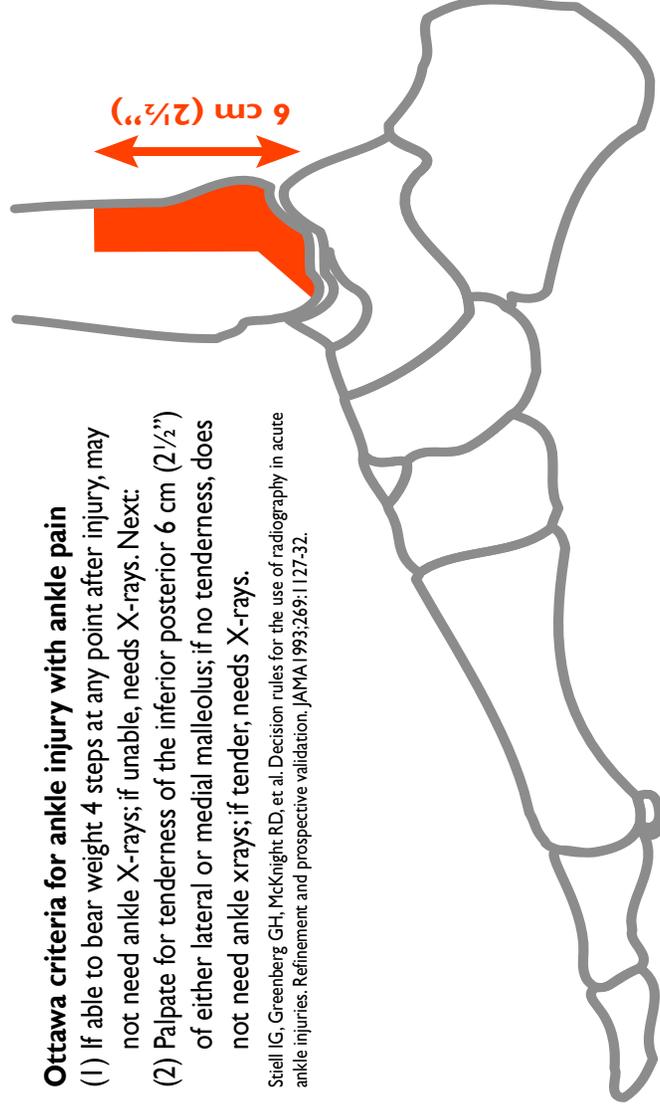
**Shoulder Dislocation Reduction: Scapular Manipulation**

Push inferior tip of scapula medially with slight lateral displacement of superior tip.

### Ottawa criteria for ankle injury with ankle pain

- (1) If able to bear weight 4 steps at any point after injury, may not need ankle X-rays; if unable, needs X-rays. Next:
- (2) Palpate for tenderness of the inferior posterior 6 cm (2½") of either lateral or medial malleolus; if no tenderness, does not need ankle x-rays; if tender, needs X-rays.

Stiell IG, Greenberg GH, McKnight RD, et al. Decision rules for the use of radiography in acute ankle injuries. Refinement and prospective validation. JAMA 1993;269:1127-32.



Stiell IG, Greenberg GH, McKnight RD, et al. Decision rules for the use of radiography in acute ankle injuries. Refinement and prospective validation. JAMA 1993;269:1127-32.

### Ottawa criteria for ankle injury with midfoot pain

- (1) If able to bear weight 4 steps at any point after injury, may not need foot X-rays; if unable, needs X-rays. Next:
- (2) Palpate for tenderness of the two marked areas; if no tenderness, does not need foot x-rays; if tender, needs X-rays