

The Detroit Regional Yacht-racing
Association

proudly presents

“**First Aid Afloat**”

with

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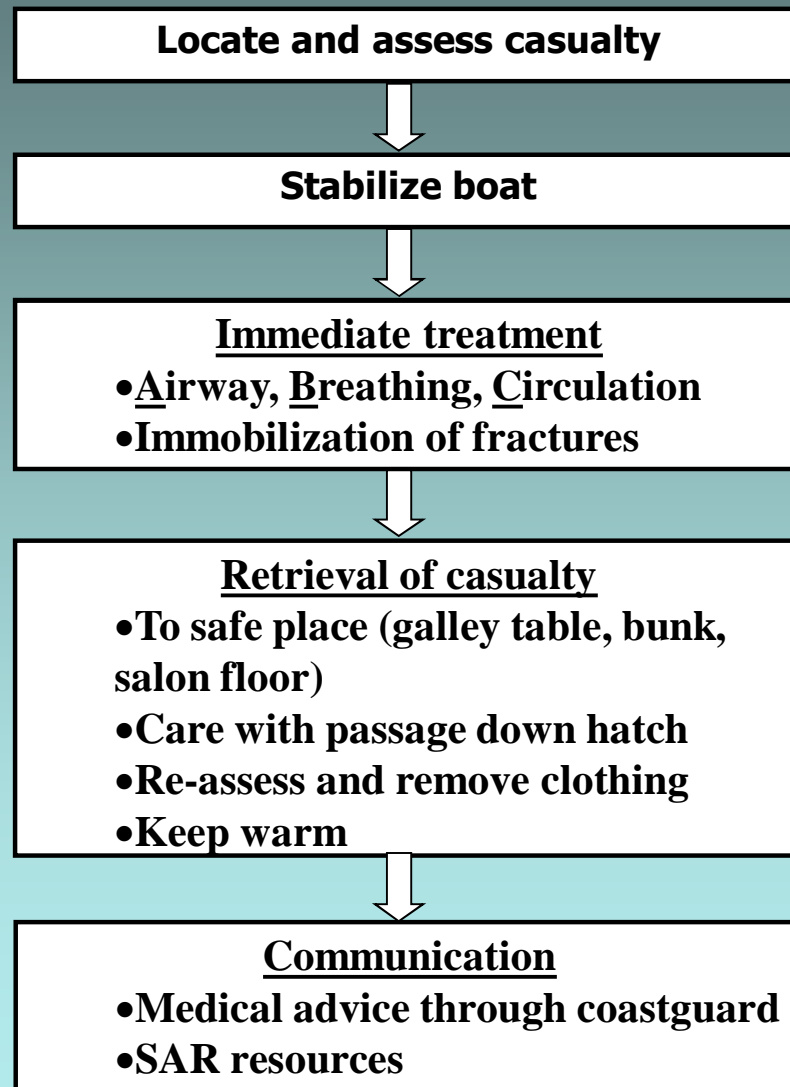
Thomas Kopp, D.O. Part 3

Part 3

Thomas Kopp, D.O.

Traumatic Injuries

Scene management



Basic Patient Assessment

Vital sign	Normal range	Seriously unwell
Pulse (beats/minute)	50 - 100	<45 or >110
Systolic blood pressure (mmHg)	100 - 140	<90
Skin blanch test (seconds) (Capillary refill test)	<2 secs	>4 secs
Breathing rate (breaths per minute)	10 - 20	<8 or >24
Temperature (°C)	36 - 37.5	<35 or >38.5
Urine output (mls/hour)	40 - 100	<20

Assessing Trauma

Approaching the injured crewman – Don't become a casualty yourself

- Clear obstacles (e.g. swinging broken mast)
- Avoid electrical cables, gas etc.
- Wear protective equipment
- Level the yacht

Assessing the crewman - Find out whether crew is responsive or unconscious.

Assess

- Speak loudly in his ear
- Shake gently by the shoulder



Action

- If responds normally:
 - has an airway
 - is breathing
 - has enough circulation to perfuse his brain

Assessing Trauma

ABCDE

- **Airway and C-Spine protection**
 - Unconscious? Neck Injury?
- **Breathing**
 - Blue? Chest Rise? Breathing Rate?
- **Circulation**
 - Bleeding? Pulse/Heart Rate? Pale?
- **Disability**
 - Pupils, Level of Consciousness: AVPU
- **Environment**
 - Scene Safety, Exposure, Skin Temp

Level of Consciousness

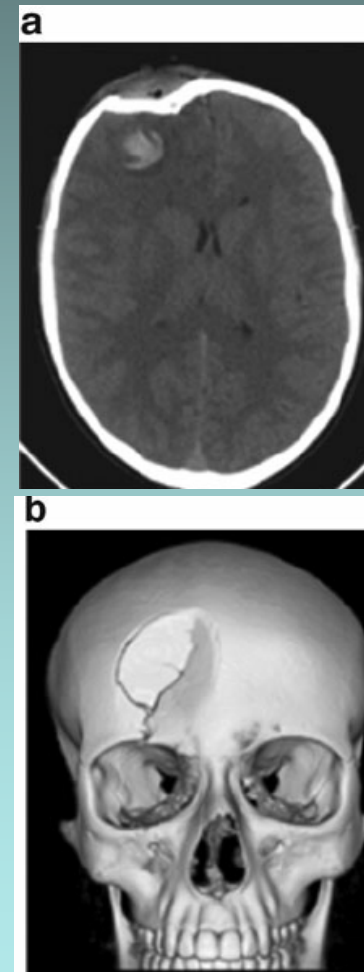
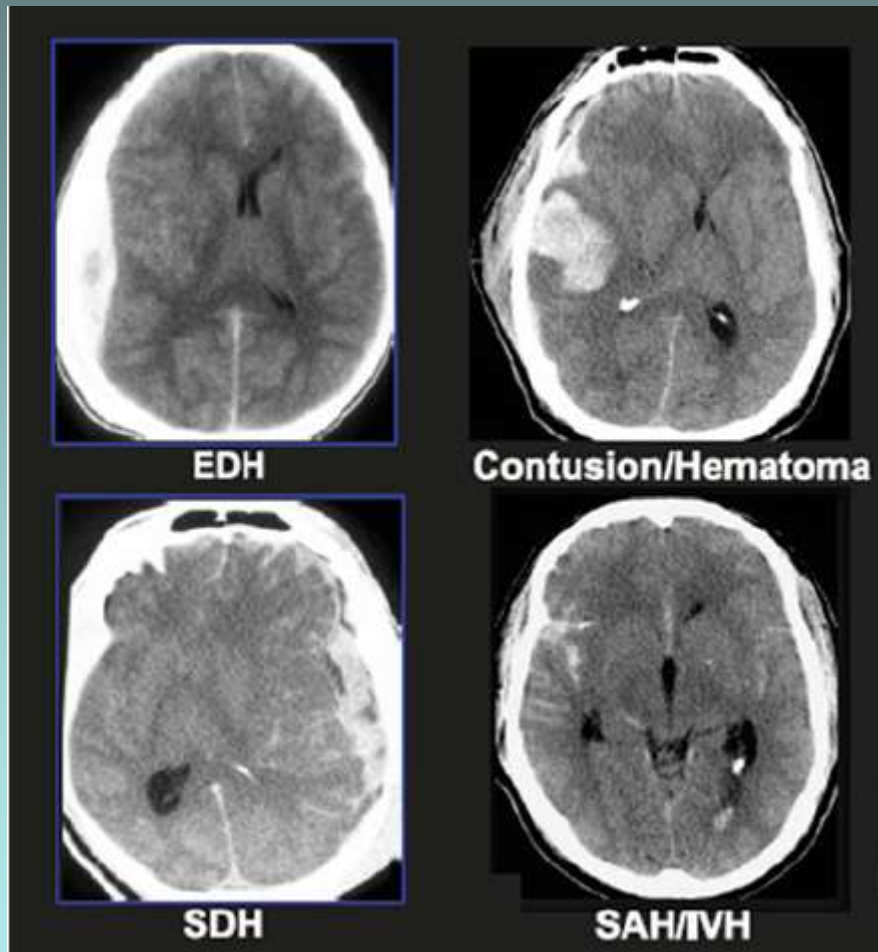
- **Glasgow Coma Scale** (Scale 3 – 15)

<u>Eyes</u>	<u>Motor Function</u>	<u>Verbal</u>
<ol style="list-style-type: none">1. Eyes closed2. Eyes open to pain3. Eyes open to voice4. Eyes open spontaneously	<ol style="list-style-type: none">1. No movement2. Abnormal extension to pain3. Flexion to pain4. Withdraws to pain5. Localises to pain6. Obeys commands	<ol style="list-style-type: none">1. No verbal response2. Incomprehensible sounds3. Speaks single words4. Confused5. Orientated

- **AVPU**

- Alert
- Responsive to voice
- Responsive to pain
- Unresponsive

Head injuries

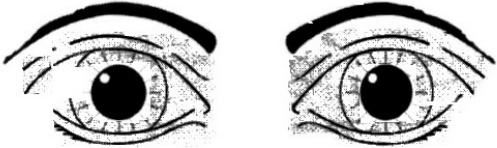
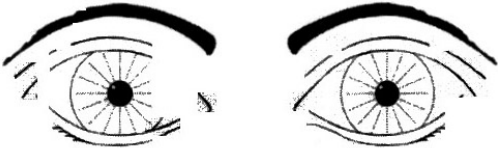

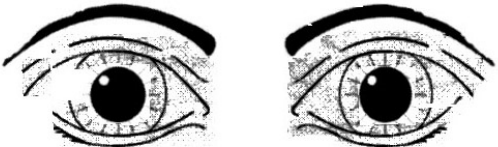


Head injuries

- Recognition and assessment
 - History
 - Circumstances of accident
 - **Was there loss of consciousness?**
 - **Patient taking blood thinners?**
 - Has the casualty been sick?
 - Does the casualty have a headache, prior to fall
 - Examination
 - **Location of wound**
 - Level of consciousness (AVPU)
 - Pupils – size and reactivity to light
 - Any neurological deficit (weakness/numbness)
 - Vital signs

Head injuries

- Examination of the pupils

<u>Pupil size</u>	<u>Response to light</u>	<u>Cause</u>
 Both pupils equally dilated	Responsive equally	Fear, alcohol, drugs such as cocaine
 Both pupils equally constricted	Responsive equally	Bright light, drugs such as opiates or benzodiazepines
 Pupils uneven	Larger pupil unresponsive	Head injury, injury to eye or direct contamination of eye with drugs
 Both pupils equally dilated	Both pupils unresponsive	Both pupils unresponsive Severe head injury

Head injuries

- Immediate treatment
 - ABCDE assessment (CSpine)
 - **Check for other injuries**
 - Analgesia
 - Keep head up at 30° (pending neck eval)
 - **Repair scalp lacerations to limit bleeding**
 - CALL FOR MEDICAL ADVICE

Head injuries

- Signs of serious injury
 - Obvious skull fracture
 - Depressed wound
 - Blood or cerebrospinal fluid from ears / nose
 - Prolonged unconsciousness
 - Dilated or uneven pupils
 - Deterioration (Change in AVPU)
 - Seizures
 - Neurological symptoms (weakness, numbness)
 - **Vomiting/Perseveration**
 - **Taking blood thinners**

Head injuries

- Minor head injury
 - Symptoms
 - Headache
 - Tiredness
 - Dizziness
 - Difficulty concentrating
 - Treatment
 - Non-sedating painkillers
 - Safe place
 - Careful observation

Concussions

- Concussion is a disturbance in brain function caused by direct or indirect force to the head. LOC?
- It is a functional rather than structural
- Headache is the most common symptom of concussion
- There are numerous assessment tools to aid diagnosis
- Cognitive and physical rest are the cornerstones of initial management.
- There are no specific treatments for concussion; therefore, focus is on managing symptoms and return to play (activity).

Spinal injuries

C4 Injury

Quadriplegia/
Tetraplegia, results in complete
paralysis below the neck



C6 Injury

Results in partial paralysis of
hands and arms as well as
lower body



T6 Injury

Paraplegia, results in paralysis
below the chest



L1 Injury

Paraplegia, results in paralysis
below the waist



7 Cervical Vertebrae

12 Thoracic Vertebrae

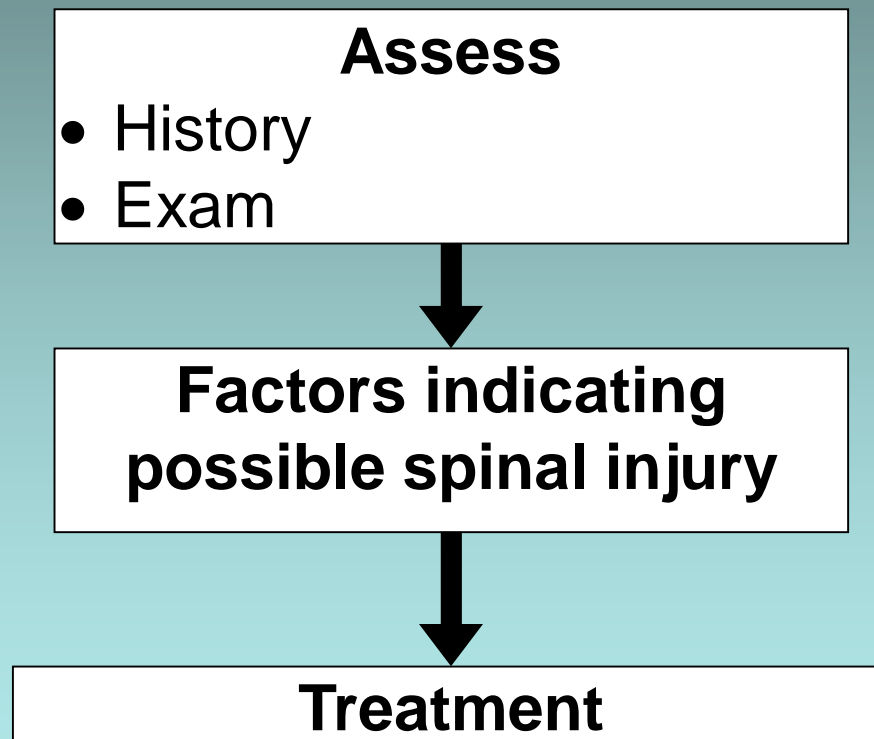
5 Lumbar Vertebrae

5 Sacral Vertebrae

4 Coccyx (fused together)



Spinal injuries



Spinal injuries

- Recognition and assessment
 - History
 - Circumstances of accident
 - Casualty reports pain in back / neck
 - Symptoms of nerve damage
 - » Numbness
 - » Pins and needles (parathesia)
 - » Loss of movement
 - » Incontinence
 - Examination
 - Look: Obvious injuries to spine, swelling, bruising
 - Feel: Tenderness, steps, sensation to light touch, pain
 - Move: Voluntary movement – care if suspected fracture

Spinal injuries

- Factors indicating possible spinal injury
 - **Fall > 2m in height, Rig/Companionway**
 - Hit by boom / spinnaker pole
 - Hit by falling rigging / mast
 - Dive in to shallow water
 - Direct head or neck injury
 - **Loss of consciousness following accident**
 - Loss of sensation or movement
 - Severe back pain following accident

Spinal injuries

- Immediate treatment
 - ABCDE assessment (CSpine)
 - Immobilize on padded spinal board and neck collar
 - **Check for other injuries (Log roll)**
 - CALL FOR MEDICAL ADVICE

Suspected neck or back injury

C-Spine Immobilisation

- Semi-rigid collars can cause pressure sores if left on for too long. Release every few hours for a few minutes until evacuated.
- A collar can be improvised by a tightly-rolled towel wrapped around the neck, under the chin and taped in position. Make sure it doesn't block the airway, and the casualty can still breathe.

Spine Precautions

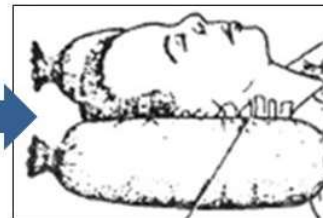
Devices used to stabilize the C-spine:



Stiff Cervical Collar



Rolled Towel



Sandbags (with a rolled towel beneath neck)



Suspected neck or back injury

Immobilisation on a spinal board

Note:.

- A spinal board can be improvised from a long storm board and sail ties. Use sleeping bag under the casualty to reduce pressure points.
- The casualty should only stay for a maximum of 2 hours on a spinal board before transferring to a firm mattress. A bunk mattress will have to suffice in most circumstances.



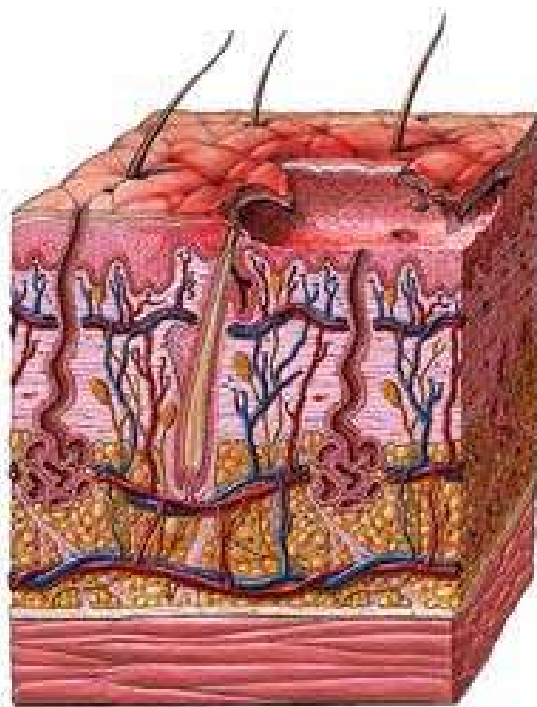
Spinal injuries

- Minor back injuries
 - Pain that is not midline
 - Worse on straining / coughing
 - Posture may be abnormal
 - Pain may extend down the back of the leg (sciatica)
- Treatment
 - Pain relief to allow mobilization
 - Gentle mobilization as tolerated
 - Symptoms of sciatica indicate increased rest

Burns

- First Degree
 - Superficial
- Second Degree
 - Partial thickness
- Third Degree
 - Full thickness

First Degree Burn



1st degree burn

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Second Degree Burn



2nd degree burn

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Third Degree Burn



3rd degree burn

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Severity

- First degree
 - Skin is red and painful but blisters not present
- Second degree
 - Skin is red and painful and blisters are present
- Third degree
 - The skin layers are destroyed and underlying fat, muscles, and/or bone may also be damaged. The burn area may **not be painful** as the nerves may have been destroyed.

First Degree Burn



Second Degree Burn



Second Degree Burn



Third Degree Burn



Treating Skin Burns

- Use copious amounts of water to the burn site, **NO ICE**
- Expose area of burn
- Dress and bandage burned area
 - Apply antibiotic ointment/silver sulfadiazine and then apply a burn dressing
 - If area is large the use the cleanest material available to cover the burned area.