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Emergency First Responder

Bleeding, Shock & Soft Tissue Injuries

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Objectives

By the end of this session you should be able to:

- Manage the patient with external bleeding and shock as well as soft tissue injuries

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Bleeding

- Arterial Bleeding
  - Bright red, spurts with pulsing of heart
- Venous Bleeding
  - Dark red, flows steadily from wound
- Capillary Bleeding
  - Bright red, oozes slowly from grazes etc

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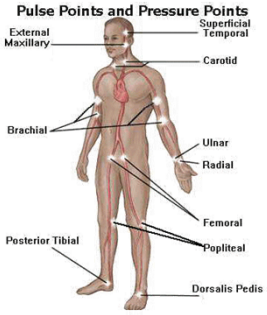
Principal Arteries



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Blood Volume

- Average Adult
  - 8 Pints or 5 Litres
  - (1 pint = 568ml)
- Approximate guide
  - Pint per stone weight
  - (1 stone = 6.35kg)

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Why Estimate Blood Loss?

- Some casualties look worse than would be expected
- Some casualties do not look as ill as would be expected

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Blood Loss - Spillage

Approximately 1 pint

Approximately ½ pint

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Estimating Blood Loss

Spillage

Injuries

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Blood Loss - Injuries

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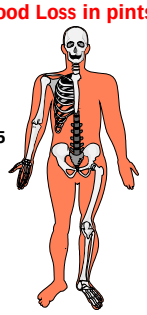
Blood Loss - Injuries

Blood Loss in pints



Humerus 1

Spleen 2.5 + 7.5

Pelvis 2.5 + 7.5

Femur 2.5

Tibia 1.5

Ribs 0.5 + 9.5

Liver 2.5 + 7.5

Wrist 0.5

Open fracture

Add ½ pint

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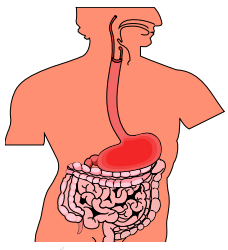
Body's Response to Blood Loss



- Compensating effort
  - Increased pulse rate
  - Increased breathing rate
  - Shuts off blood supply to non essential areas
- Effects on organs
  - Nausea and vomiting
  - Weakness, dizziness
  - Unconsciousness

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Dangers of Blood Loss

Reduced blood supply to organs

Reduced oxygen supply to organs

Cells begin to die

Organs begin to fail

Death

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Shock

The condition which results from the failure of the cardiovascular system to adequately supply all parts of the body with oxygen

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Causes of Shock

- Hypovolaemic
  - Decreased fluid volume
- Cardiogenic
  - Heart Failure
- Neurogenic
  - Spinal injury
- Anaphylactic
  - Acute Allergic Reaction

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Recognition of Shock

- Pale, cold & clammy
- Pulse – rapid & weak
- Breathing – rapid
- Nausea & vomiting
- Thirst
- Feeling weak & dizzy
- Unconsciousness

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Treatment of Shock

- Scene size up
- Initial assessment
  - Control the bleeding
  - Administer oxygen
- Lie the casualty down
  - Raise the legs if possible
  - Keep warm
  - Loosen tight clothing
- Reassure
- Monitor closely
- Transport early

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Recognition of Severe Blood Loss

- Pale / Grey
- Rapid pulse
- Loss of peripheral pulses
- Low blood pressure
- Delayed capillary refill
- Air hunger
- Empty veins
- Anxiety / Restlessness
- Unconsciousness

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Management of Severe Blood Loss

- Scene size up
- Initial assessment
  - Control the bleeding
  - Administer oxygen
- Lie the casualty down
  - Raise the legs if possible
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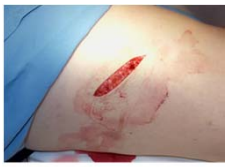
SOFT TISSUE INJURY

Two General classifications:

OPEN WOUNDS



the skin is open

CLOSED WOUNDS

the skin is not broken (e.g. Bruise)

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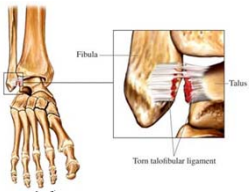
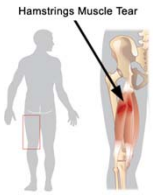
Closed Soft Tissue Injury

- Sprain
  - Overstretching or tearing of ligaments around a joint



- Strain
  - Overstretching or tearing of muscle or tendon



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Closed Soft Tissue Management

- Scene size up
- Initial assessment
  - Primary Survey
    - C.A.c.B.C.D.E.
  - Vital signs
  - Secondary Survey
    - Head to Toe
  - RICE

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R.I.C.E.

Rest

Ice

Compression

Elevation

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OPEN WOUNDS

- Abrasions / Grazes
- Incisions
- Lacerations
- Punctures
- Avulsions
- Amputations
- Crush Injuries

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General Treatment of Open Wounds

- Standard Precautions
- Expose wound
  - do not remove embedded objects
- Clear the wound surface
- Control Bleeding
  - Direct Pressure only e.g. Spinal pt
  - Direct Pressure + Elevation
  - Indirect Pressure (P + AP only)
- Prevent further contamination
  - Apply Sterile Dressing + Pad
  - Bandage in Place
- Keep Still + Reassure + treat for Shock
- Oxygen if patient is not already receiving it

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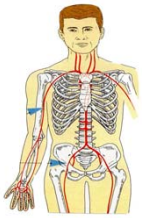
Indirect Pressure

Only used by P or AP if direct pressure is inadequate



- Applying direct pressure to a main artery above site of injury
- Do not compromise the injury e.g. Fracture
- Stops blood supply into a limb
- Apply for a maximum of ten minutes at a time

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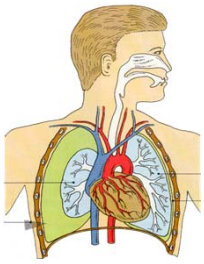
Penetrating Chest Injury



- Trauma
  - Knife
  - Gunshot
  - Fractured ribs

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Penetrating Chest Injury

- Recognition
  - Wound on the chest
    - Sucking sound
    - Bubbling
  - Breathing
    - Difficult – tracheal dev.
    - Increased rate
    - Cough up blood
  - Hypoxia
    - Reduced level of responsiveness
  - Shock

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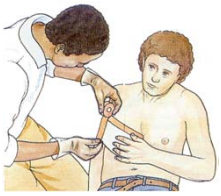
Penetrating Chest Injury

- Management
  - Scene size up
  - Initial assessment
    - Clear airway
    - Ventilate if necessary
    - Oxygen
  - Sit the casualty up if possible
  - Seal the wound
    - Goal-post dressing with Flutter valve
  - If unconscious
    - Recovery position if possible



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Chest Wound Dressings

Completely occlusive dressing with central flutter valve

Three side occlusion with lower opening as flutter valve

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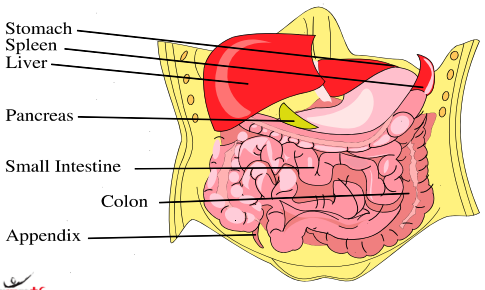
Abdominal Organs



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Types of Abdominal Trauma

- Blunt Trauma
- Penetrating Trauma
- Compression - Crush injury

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Results of Abdominal Trauma

- Intra-abdominal bleeding
- Damage to internal organs
- Rupture of internal organs
  - Spleen
  - Intestine
- Infection:
  - Opening to external environment
  - Penetration with contaminated object
  - Rupture of intestine – bacteria laden!
- Impairment of renal function:
  - Direct trauma to kidneys
  - Blood Loss – poor perfusion

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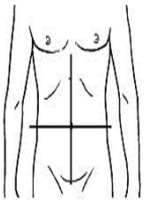
Physical Examination of Abdomen

- Expose the abdomen
- Look for any wounds
- Look for any obvious masses
  - Internal and external
- Check for colour e.g. contusions
- Palpate gently - looking for consistency, rigidity, guarding & any pulsating mass



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Abdominal Wound Management

- Scene size up
- Initial assessment
- Administer oxygen
- Dressing & pad
  - If intestines are protruding, cover with plastic or damp dressing
- Bandage to support dressing
- Raise and support knees
- If vomiting:
  - Press firmly on the dressing, this prevents further protrusion of internal organs when pt vomits

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Amputation Management

- Scene size up
- Initial assessment
- Control bleeding
  - Direct pressure
  - Dressing and pad
  - Bandage
  - Elevate
  - Manage amputated part
  - Administer oxygen
  - Arrange for early transport

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Amputation Management

Care of amputated part

- Wrap in plastic
- Wrap in cloth
- Place in ice
- Label the package
  - Name / date / time
- Hand over personally

- Do not:
  - Wash the part
  - Allow direct contact with ice

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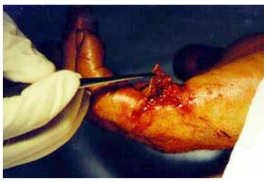
Avulsion Injury

Involves the tearing off or loose flaps of skin

- Commonly involves:
  - Scalp
  - Ear
  - Eyelid
  - Forearms
  - Legs



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Avulsion Injury Management

- If the flap is attached:
  - Clear the surface of the wound
  - Reposition the flap carefully
  - Control bleeding – Dressing + Pad + Bandage
- If the flap is loose:
  - Care for the flap as for an amputated part
  - Control the bleeding

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Burns

- Thermal injury to the skin
- The major concerns for the First Responder
  - Airway involvement
  - Fluid loss causing shock
  - Infection of the burn site

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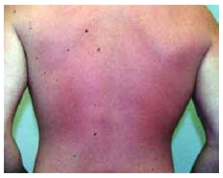
Assessing Burns

- Cause and Circumstances
- Extent
- Depth
- Location
- Airway involvement



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Circumstances & Cause

- Circumstance may indicate the possibility of additional medical problems
- Cause
  - Dry heat
  - Wet heat
  - Chemical
  - Electrical
  - Cold Injury
  - Radiation

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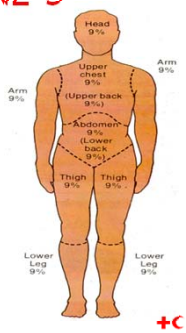
Rule of NINE'S

- Is used to calculate the area of the body affected by the burn
- Is used to calculate the fluid loss due to a burn



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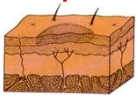
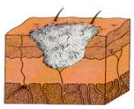
Burn Depth

- Superficial
- Partial thickness
- Full thickness





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Location of Burns

- Of particular importance burns involving
  - Face
  - Hands
  - Feet
  - Genitalia
  - The full circumference of a limb

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Burns Involving the Airway

- May be due to inhaling hot air or gases
- More likely if fire is in an enclosed space
- Risk that rapid tissue swelling will obstruct the airway
- Full extent may not be obvious

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Management of a Severe Burn

- Perform scene size up
- Perform an initial assessment
- Cool the area
  - For at least 10 minutes
  - Do not chill the casualty
  - Water or commercially available dressings
- Remove rings / watches
- Remove smoldering clothing
- Cover the area with a sterile dressing
- Monitor the casualty

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Burns involving the Airway

- Attempt to maintain a clear airway
- Give oxygen
- Offer ice or sips of cold water
- Monitor closely
- Urgent transport to hospital

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Chemical Burns

- Chemicals may irritate, burn or penetrate the skin
- Signs of the burn may develop slowly
  - Intense stinging pain
  - Discolouration
  - Swelling
  - Blistering
  - Peeling

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Chemical Burn Management

- Perform scene size up and initial assessment
- Irrigate the area with water for at least twenty minutes
- Remove contaminated clothing
- Monitor closely
- Remove to hospital
  - Bring details of the chemical

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Burns requiring Medical Advice

- All full thickness burns
- All partial thickness burns > 1%
- All superficial burns > 5%
- Burns with a mixed pattern of depths
- Burns involving face, hands, feet or genitals
- All circumferential burns
- All electrical and chemical burns

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Bandages & Dressings

- Dressing
  - Any material –preferably sterile – placed over a wound to control bleeding and prevent infection
- Bandage
  - Any material used to hold a dressing in position

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Summary

- Differentiation of Blood Vessels and dangers of bleeding
- Definition and treatment of Shock
- Pre-hospital care of a patient with a soft tissue injury
- Pre-hospital care of a patient with burns
- Functions of bandages and dressings