CANADIAN COAST GUARD
SEARCH AND RESCUE - WESTERN REGION
RESCUE SPECIALIST PROGRAM

Protocols, Procedures and Quick Reference Manual

December 2016 Edition

Property of:

COAST GUARD RESCUE SPECIALIST PROTOCOLS
HANDBOOK EDITION

This handbook is intended for use as a quick field reference, by CCG Rescue Specialists (RS) and reflects the accepted standard of care and RS competencies.

Contents

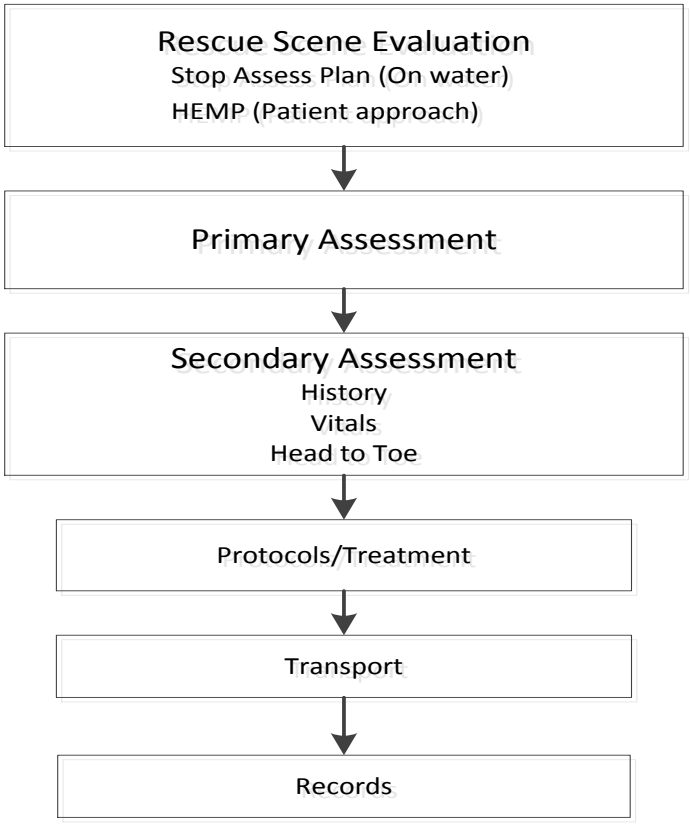
This manual serves as a quick reference guide for Canadian Coast Guard Rescue Specialists with a focus on the operational protocols and procedures for the prehospital care of patients that come into our care in territorial waters of Canada.

For information regarding this booklet contact:
RS Coordinator
Canadian Coast Guard (Pacific)
250-480-2635

PATIENT ASSESSMENT

The three priorities in Search and Rescue are CREW → CRAFT→ MISSION. Scene assessment for safety of responders and vessel comes before patient assessment.

ASSESSMENT MODEL

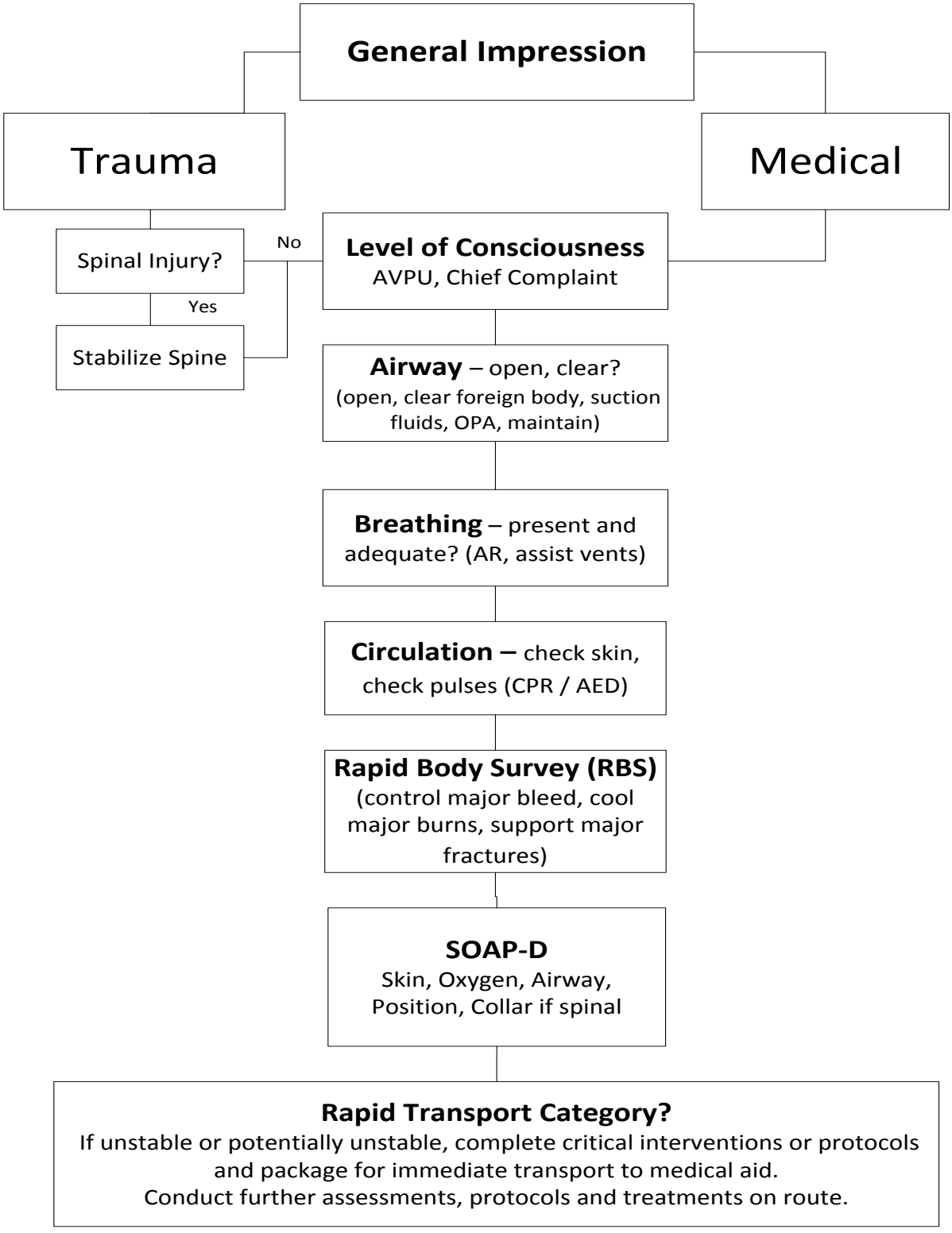


RESCUE SCENE EVALUATION

To ensure scene is safe for responders and patient and to gather information regarding patient condition. Secure scene before accessing patient. Assess and consider[1]:
SAP (Stop Assess Plan) while vessel is approaching scene
HEMP (Hazards, Environment, Mechanism, People/PPE when approaching patient)

- [1]Dispatch information? This may be incomplete.
- Environment? (weather, sea conditions, darkness, limitations of space, etc.)
- Stability and hazards? (air quality, vessel characteristics, fire, chemical, etc.)
- Mechanism of injury?
- Index of suspicion for particular injury?
- Trauma or medical?
- Numbers of casualties?
- Need for additional resources or specialized equipment?
- Personal protective equipment. Body substance isolation (BSI).

PRIMARY ASSESSMENT



SECONDARY ASSESSMENT

To establish or confirm the chief complaint, establish baseline vital signs, and gather more information about injuries and medical conditions[2].

History

Symptoms – How do you feel? Any other symptoms?
Allergies – Do you have any allergies?
Medications – Taking any medications? If yes, what for?
Past History – Had this problem before? Any other problems?
Last oral intake – When did you last eat or drink?
Events prior – How did this happen? What were you doing?

Onset – How did it come on (sudden or gradual)?
Provocation – What makes it better or worse?
Quality – How would you describe it?
Region/Radiation – Where is it, where does it go?
Severity – How bad is it on a scale of 1-10?
Time – When did it start?

Vital Signs

Every 5 minutes if unstable - Every 15 minutes if stable (as a guideline).

LOC – AVPU or Glasgow Coma Scale[3]
Pulse – Rate and quality
Respiration – Rate and quality
Eyes – Pupil size, equality and reaction to light
Skin – Colour, texture and temperature
SPO2 – As by fingertip pulse oximeter
B/P – By palpation or auscultation
B/G – Blood Glucose as indicated
Temp – Temperature

Head-to-toe Examination

A thorough and systematic physical examination and functional inquiry; done in a manner appropriate to the casualty's history and chief complaint (trauma or medical).

[2] History, Vital Signs, and a Head-To-Toe (detailed physical exam) appropriate for the condition. If unstable or potentially unstable complete after critical interventions and patient is on route to medical aid.

[3] See Appendix III – Glasgow Coma Scale

PROTOCOLS

Protocols are specific instructions or rules that allow the RS to perform certain procedures that may be considered beyond the realm of first aid**.** (e.g. Assisted Medications, AED, Traction Splint, Entonox).

Because protocols may have a potent effect on the patient, the Rescue Specialist must, as soon as practical, notify the receiving hospital/agency of the patient's condition and the treatment that has been provided.

Immediate Protocols (Indirect Medical Control) allow our Rescue Specialists to act under the medical director's orders to provide care without direct communications.

In order to complete a protocol you will need to complete **four things**:

1. Complete **Primary Survey** and make your transport decision
2. Obtain a **History** SAMPLE/OPQRST
3. Baseline **Set of Vitals** relevant to condition
4. Conduct a **Physical Exam** of the areas relevant to the protocol

Delayed protocols – (Direct Control) are interventions that may only be carried out with a specific order from a physician[4] (e.g. Prescription or Controlled Medications from ships issue).

EPOS Service

- Emergency Physician Online Support (EPOS) is available for the province of British Columbia and is a clinical support service when a patient is 'out-of-hospital'.
- Pre-hospital events – JRCC will provide the communication lines to EPOS
- The EPOS service is delivered over the phone by emergency and critical care physicians from around BC that have been contracted by BC Emergency Health Services, Medical Programs, to provide 24/7 support, with a requirement to respond to calls within 30 seconds of the phone ringing.
- Pre-hospital support physicians are called PRP's (Primary Response Physician)

TREATMENTS (first aid)

Treatments are procedures that are usually non-invasive and normally in the domain of first aid. They do not require supervision by a physician. First aid treatments are typically principle based.

[4] See Appendix IV – Medical Communications

RESUSCITATION GUIDELINES

AED should be applied during the resuscitation attempt (refer to AED protocols).

When to start CPR

When victim is recovered non-breathing and pulseless, **always start CPR unless**:

- Traumatic injuries exist which preclude survival (see AED protocol).
- Reliable confirmed submersion time greater than 90 minutes (if unsure, CPR).
- Rescuer's safety is at risk.
- Initial tasking was for a body recovery and death is obvious.
- A physician or another pre-hospital care provider, acting under the license of a physician, takes responsibility for the patient and advises you not to start.

AR and CPR - General Guidelines

- If trauma in mechanism use jaw-thrust to open airway.
- Airway management with oro-pharyngeal airway (OPA) and suction. Apply oxygen.
- Assess for signs of breathing and circulation at same time. Check carotid pulse for 10 seconds. If not present begin chest compressions first. 30 compression 2 BVM ventilations
- Reassess after 2nd minute (5 cycles of 30:2) and every 2 minutes thereafter.
- Infants and children with pulse rate less then 60 and signs of poor perfusion despite oxygen and ventilation should receive compressions.

AR

Adult - 1 breath / 5-6 seconds
Child (1 year to onset of puberty) / Infant (under 1 year of age) - 1 breath / 3-5 seconds

CPR – Compression/Ventilation Ratio

Adult, 1 or 2 rescuers / Child or Infant, 1 rescuer - 30 compressions / 2 ventilations
Child or Infant, 2 rescuers – 15 compressions / 2 ventilations

Foreign Body Airway Obstructed (FBAO)

- If mild obstruction (patient can cough), stand by and encourage to cough.
- If obstruction becomes severe begin back blows/abdominal thrust until object is cleared, or patient becomes unconscious
- Consider relieved when; conscious casualty can speak or cry; unconscious casualty can be ventilated and is not hypoxic. Transport to medical attention.

Conscious Choking Adult or Child – 5 back blows and 5 abdominal thrusts; repeat until cleared or patients becomes unconscious.

Conscious Choking Infant – Alternate 5 back blows, 5 chest thrusts until cleared or patient becomes unconscious.

Adult, Child or Infant Becomes Unconscious – Look for obstruction, 2 attempts to ventilate, give 30 chest compressions, repeat until cleared.

AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

Medical Direction provided by Medical Advisor for Canadian Red Cross Victoria.
(Complete AED protocols are also available separately)

Considerations for AED use

- The **AED should be attached any time that CPR would be performed**.
- **For small children -** if less than 1" between pads place one on front of chest and one on the back.
- **In case of hypoxic arrest or a delay of more than 4 minutes without CPR, perform 2 minutes (5 cycles of 30:2) of CPR prior to AED.**
- Use a blanket or stretcher to **isolate the patient from conductive surfaces**.
- **If chest is hairy, shave** to ensure electrode contact. **Ensure chest is dry.**
- If medication patches are present on chest, remove these prior to defibrillation.
- If implanted pacemaker or other device present place pads 1"clear of device.
- Keep free flowing oxygen devices away from person during defibrillation.
- If pregnancy, follow the standard protocol.
- **Each single shock should be followed by 2 minutes (5 cycles) of CPR.**

Prior to pushing button for shock ensure all are clear of patient stating "On 3 we're going to shock. 1 - I'm clear, 2 - you're clear, 3 - we're all clear".

After Use

Following any use of AED (shock or no shock), download data from the AED and send to RS Coordinator who will forward to AED Medical Director.

Protocol for AED use in Hypothermic Cardiac Arrest

In the event of cardiac arrest with associated severe hypothermia, perform all of the usual activities of resuscitation except:

1) If cardiac arrest is suspected a carotid **pulse check should be for 30-45 seconds** prior to initiation of CPR. If un-witnessed / suspected hypoxic perform 2 minutes of CPR prior to AED.
2) **If shock advised for severe hypothermia a total of one shock should be used**, then continue with CPR, re-warming, and transport to a higher level of care. No further shocks should be administered until re-warming has been undertaken, and the core temperature is confirmed to be greater than 30°C.

If the confirmed core temperature is <15°C in association with cardiopulmonary arrest, then resuscitation may be withheld. If there is any doubt as to the above indications, then the rescuer should initiate resuscitation until a higher level of care can be involved.

Protocol for AED use in Traumatic Cardiac Arrest

For victims that have an obvious traumatic injury as supplied by the history or direct observation.

AED may be used but should not significantly impede the extrication of the patient and mobilization to a higher level of care.

In the following cases, it can be presumed the likelihood of survival is nonexistent:

If there is an unresponsive, collapsed, pulseless patient with

1) No spontaneous respirations, and no pulse felt for 30 seconds **and**
2) The presence of one of the following
    a. Severe penetrating brain injury
    b. Complete body transaction
    c. Severe burns to the majority of the body or
    d. Obvious penetrating trauma to the chest or abdomen

In these cases, it is reasonable to NOT initiate resuscitation with or without an AED.
If there is any doubt as to the above indications, then the rescuer should initiate resuscitation until a higher level of care can be involved.

Bridge Jumper /Extreme Height Protocol (Dr. MacPherson)

For cases in which a victim has fallen (witnessed) from an extreme height (>50M, car deck of Lions Gate or Alex Fraser bridges) into the water, data suggests that for patients recovered pulseless, resuscitation efforts are futile.

If **all** of these conditions are met resuscitation should not be initiated:

- Witnessed fall from car deck of the Lions Gate or Alex Fraser bridges
- Unconscious and unresponsive
- No spontaneous movement or respirations
- Pulseless [sustained pulse check on BOTH sides of the neck] for 30 seconds

If any of the above are not present, resuscitation and rapid transport to BC Emergency Health Services should be initiated.

An AED can be applied to analyse the patient and if shocks are advised, start CPR. A three lead AED will be supplied to Sea Island and Kitsilano units where the crews will be able to check the patient rhythm for asystole, verifying no CPR needed.

AED - Protocol for Multiple Casualty Incidents with the AED

Assess victims as for presumption of death in traumatic arrest protocol and consider withholding resuscitation efforts if so indicated by that protocol.

- Apply electrodes to the first victim with no pulse and initiate the AED protocol.
- If there are other victims who may benefit from defibrillation, the AED should be moved to the next after one "no shock advised" message.
- **Rotate the AED between victims after a "no shock advised" message** as appropriate while instituting other resuscitation efforts and extrication activities.
- If a victim suddenly loses pulse, place AED as soon as possible for analysis.

Protocol for Cessation of Resuscitation in the Field (Dr. MacPherson)

After 15 mins of CPR the RS or CO/OIC can contact EPOS physicians through JRCC and advise them of the patient's condition, the EPOS physician can issue instructions for cessation of resuscitation at or up to 30 mins. If EPOS physician is not available we can use the following Western Region protocol.

Regional Cessation Protocol; If all the following are present, then resuscitation efforts may be ceased. The likelihood of a meaningful neurological outcome is 0%.

- **Body temperature >35°C (does not apply to hypothermic patients)**
- **Unresponsive, no spontaneous breathing or movements**
- **Lack of pulse for >30 minutes despite good CPR for 30 minutes**
- **3 or more "no shock advised" messages**

SHOCK – TREATMENT PRINCIPLES

- **Primary assessment and critical interventions**
- **Anticipate that shock may exist and treat before signs are obvious**
- **If signs of shock are obvious, rapid transport to aid, avoiding injury aggravation**
- **Assist breathing and administer high percentage oxygen if PO2 is ≤ 94%**
- **If possible treat the cause. Control any obvious bleeding**
- **Keep at rest in best position[5], warm, and comfortable. Give nothing by mouth**
- **Provide emotional support to patient**
- **Monitor during transport (vital signs every 5 minutes if unstable)**

SHOCK

- Defined as the state of inadequate perfusion.
- Occurs secondary to trauma or illness due to loss of fluid volume, loss of vascular tone, failure of the heart to pump adequately or a lack of oxygen/impaired respiration.
- Initially the body will compensate and signs will be subtle. If cause not corrected then shock becomes progressive / decompensatory with more obvious signs[6], eventual permanent damage and death may result.

Internal Hemorrage – Recognition

- Consider patient history. May be traumatic or spontaneous medical cause
- General signs and symptoms of shock
- Pain, tenderness, swelling, or discoloration where injury is suspected
- Bleeding from mouth, rectum, or other natural body openings

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[5] **Position of Shock Casualty**

- Conscious with breathing problems (cardiogenic or respiratory) – Semi sitting
- Suspected hypovolemic or vasogenic shock – supine if injuries allow
- Unconscious patients – recovery position if injuries allow (to protect airway)
- Pregnant patient – inclined to left side (to prevent supine hypotensive syndrome)

[6] **Shock – General Signs and Symptoms**

- Restlessness, anxiety, confusion, disorientation, trembling
- Pale, cool, clammy, moist skin – may sweat profusely
- Weak, rapid, or irregular pulse
- Shallow, laboured, rapid, or grasping breathing
- Possible fainting, weakness, dizziness, thirst, nausea
- Lustreless eyes, dull expression
- Pulse oximeter reading less than 94% indicates the need for supplemental oxygen - *Oxygen should never be withheld from an apparently hypoxic patient, regardless of SPO2 reading
- Drop in blood pressure, dilated pupils, and unconsciousness are late signs

ALLERGIC REACTION[7] [8] and ANAPHYLACTIC SHOCK[9]

ANAPHYLACTIC SHOCK – ASSISTED MEDICATION PROTOCOL (Epipen)

INDICATION – Suspected anaphylaxis, indicated by: signs of anaphylaxis, history of allergy, probable exposure to allergen, patient carries own medication (Epipen auto-injector)[10].

BEFORE ASSISTING WITH EPIPEN (patient's own) YOU MUST:

1. **Complete primary assessment and arranged transport.**
2. **Obtain history (SAMPLE) and investigate chief complaint (OPQRST).**
3. **Obtain a baseline set of vital signs.**
4. **Physical exam to confirm probability of severe allergic reaction.**

Refer also to sequence on next page

Access of epinephrine from ship's pharmacy (Annex A, page A-18) is a Delayed Protocol, requiring an order from a physician.

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[7] **Allergic Reaction - Symptoms,** usually mild, may include hives, itching, runny nose and watery eyes. Patient may self-medicate with Anti-histamines.
Treatment - The RS may **assist person with mild allergic reaction to take antihistamine from RS jump-kit, after completing assessment (History and Vitals) to confirm probability of allergic reaction.** Do not assist if allergic to antihistamines. If in doubt seek advice.

[8] **Antihistamine** (e.g. Diphenhydramine {Benadryl or Allernix}) – Blocks further histamine release, (but does not reverse histamines or other chemicals already released as part of allergic reaction). Indicated as treatment for mild allergic reaction or as follow-up to Epinephrine in cases of anaphylaxis. **Follow product directions (typical diphenhydramine dose 12.5 - 50 mg. child - adult)**

[9] **Anaphylactic Shock**

- **A severe and potentially life-threatening allergic reaction.** Characterised by rapid onset, respiratory distress, wheezing, hypotension, itching, hives, swelling/edema, vomiting etc...
- **Rapid transport, high-flow or positive pressure oxygen**. CPR if needed.
- **Identify if patient carries medication and assist as per protocol (below).**

[10] **Epinephrine** (sympathetic agonist) – **Actions**; interferes with release of histamines and other chemicals released in response to exposure to allergen; vasoconstriction with elevation of blood pressure; increased heart rate and strength of contraction; bronchial dilation by relaxation of bronchial smooth muscle. **Adverse Side Effects**; may include tremor; anxiety; headache; diaphoresis (profuse sweating).

ALLERGIC REACTION / ANAPHYLAXIS – Assisted Medication – Sequence

Primary Assessment

- LOC, check airway and ensure adequate breathing (level of distress?)
- Check pulses and skin condition (hives or flushing?)
- Rapid body survey (check for sting site - apply cold if found)
- Position for ease of breathing, **begin high flow oxygen**, calm and reassure

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Transport Decision

- If anaphylaxis or severe allergic reaction consider unstable and arrange for transport

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History with SAMPLE and OPQRST

- Determine if history of allergy / anaphylaxis
- Potential history of exposure to allergen
- How does this event compare to previous exposures?
- Does person carry or use anti-histamines or Epipen (check for the 6 R's)

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Baseline Vital Signs

- To aid in assessment of mild or severe reaction

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Physical Exam

- If available auscultate chest sounds, assess for physical signs (urticaria, edema, hives, flushing)

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If mild allergic reaction

- Consider assisting with antihistamine, if available
- Continue to monitor and transport to medical attention

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If severe allergic reaction (distress)/ anaphylaxis

- Locate medication and assist with patients own Epipen provided protocol is met. If unavailable, consider medical order for use of ships Epinephrine.
- Read label carefully and follow instructions
- Confirm the medication within Epipen is clear in colour and not expired
- Actively assist if the patient is too weak to use on own.
- For Epi-pen remove blue safety cap, press orange injector firmly against lateral thigh and hold 10 seconds. Dispose of injector in sharps container.

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Continue with transport and monitoring

- Continue transport and monitor closely. Epinephrine acts within minutes but additional dose may be required within 20 minutes.
- Consider follow up with antihistamine (Benadryl or Allernix 25-50 mg) for longer term effect. Give notification and seek medical advice or orders if required.

RESPIRATORY EMERGENCIES

RESPIRATORY EMERGENCIES – TREATMENT PRINCIPLES

- **Complete primary assessment and arrange for priority transport**
- **Establish and maintain airway.** (e.g. OPA if reduced LOC)
- Maximum continuous suction time is 15 seconds to clear airway
- **Place patient at rest.** Conscious patient will usually prefer a semi-sitting position.
- Unconscious should be supine or lateral for airway control
- **Administer high percentage oxygen via non-rebreather mask** (10-15 lpm), **or use BVM with reservoir if assisted ventilation is required.** Need for assisted vents based on quality, rate (e.g. <10 or >30), and patient's general condition
- Conduct **secondary assessment as for medical patient,** including chest sounds[11]
- **As much as possible manage any medical or traumatic cause for the distress**
- **Assist with medication as per protocol** (next page)

Chronic Obstructive Pulmonary Disease (COPD) – (Emphysema or Chronic Bronchitis). May have hypoxic drive - supplemental O2 may slow breathing over time. **If in distress and low PO2 deliver high % O2, monitor and be prepared to assist**. Seek advice. When patient improves reduce flow of O2 (4-6 lpm)

Asthma - Wide spread but reversible narrowing of airways, with bronchospasm, edema, and increased mucous secretion. Status asthmaticus is life threatening severe and prolonged attack. **If possible use humidified oxygen and if the patient carries a prescribed inhaler (MDI) assist as per protocol (next page)**.

Acute Pulmonary Edema - Fluid in lungs impairs normal gas exchange. Distressed breathing, fluid chest sounds (crackles), JVD, peripheral edema, coughing, cyanosis. **Support breathing with positive pressure oxygen**. Keep at rest and transport.

Inhalation Injuries - Caused by breathing in heated or irritant gases. Identify by history of exposure, presence of carbon or sooty particles around airway, burns or singed nose hairs or mucous membranes, etc.

Hyperventilation - Occurs in anxious patients. Symptoms may include numbness, tingling or cramping of hands and feet. **If possible, rule out serious cause, reassure the casualty and coach to slow breathing.** Do not use a paper bag or withhold oxygen.

[11] **Absent, diminished or unusually noisy chest sounds indicate problem.** Assess with stethoscope at second intercostal space at mid-clavicular line, and fourth intercostal space at mid-axillary line. On back is preferred for seated patients.

SHORT OF BREATH

ASSISTED MEDICATION PROTOCOL (Metered Dose Inhaler) INDICATION – Shortness of breath with a history of asthma or COPD and carries own medication (MDI – Ventolin[12] / Salbutamol).

BEFORE ASSISTING WITH INHALER (patient's own) YOU MUST:

- **Complete primary assessment and arranged transport.**
- **Obtain history (SAMPLE) and investigate chief complaint (OPQRST).**
- **Obtain a baseline set of vital signs.**
- **Physical exam for respiratory emergency (includes auscultating chest).**

METERED DOSE INHALER (MDI) – Assisted Medication – Sequence

Primary Assessment - position for ease of breathing, **begin high flow oxygen**, reassure

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Transport Decision - generally considered an unstable patient - arrange for transport

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History with SAMPLE and OPQRST - determine asthma history and triggering event, compare to previous events, identify medications and if taken - MDI (broncho-dilator)?

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Baseline Vital Signs

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Physical Exam - if possible auscultate chest sounds

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Assist with patients own MDI (e.g. Ventolin) provided protocol is met

- Locate **the patient's medication** and ensure not expired.
- **Read label carefully.** Shake canister vigorously.
- **Use spacer if possible** (more effective). Instructor assist the **patient to exhale fully** then place his lips around mouthpiece of the upright canister or spacer.
- Inhale slowly & deeply for about 5 seconds. **– depress canister during inhale.**
- **Ask patient to hold breath** for at least 10 seconds. Coach to breathe out slowly.
- Continue to **provide oxygen.**
- **Continue transport and monitor closely.** Additional doses may be required. **Seek medical advice or orders.** (additional doses usually 2 minutes apart)

Access of Salbutamol (Ventolin) from ship's pharmacy (Annex A, page A-19) is a Delayed Protocol, requiring an order from a physician.

[12] **Ventolin** (bronchodilator) – **Actions**; relaxes bronchial smooth muscle; improved function through decreased airway resistance, mucous drainage and increased vital capacity. **Adverse side effects**: anxiety and tremor, headache, tachycardia and palpitations, hypertension, nausea

CARDIOVASCULAR EMERGENCIES

CARDIAC EMERGENCIES – TREATMENT PRINCIPLES

- **Complete primary assessment and arrange for transport.**
- **Decrease anxiety.** Reassure and loosen tight clothing.
- **Position patient for comfort and ease of breathing** (semi-sitting).
- **Oxygen should only be administered if PO2 is less than < 95% and/or the patient presents with obvious symptoms of shock (pale, cool, clammy skin) or SOB.** Assist ventilation as required
- Conduct **secondary assessment as for medical patient**.
- If **in cardiac arrest resuscitate with AED and CPR**.
- **Assist suspected MI or angina patient to take aspirin/ASA[13]** (patient's own or from CG kit) and **nitroglycerin[14]** (patient's own), **as per protocol (next page).**
- **Access of Nitroglycerin from ship's pharmacy (Annex A, page A-11, spray or tablet) is a Delayed Protocol, requiring an order from a physician.**

Congestive Heart Failure (CHF) - Failure of adequate ventricular function, results in backup of fluids into the lungs or body tissues. **Typical Signs and Symptoms include**: progressive or acute shortness of breath, anxiety or confusion, wheezing, paleness or cyanosis, productive cough, tachycardia, JVD, a desire to sit upright, pulmonary edema or edema of dependant (lower) parts.

Angina - Chest pain due to inadequate blood flow to heart muscle; may be stable (brought about by exertion or stress) or unstable (occurs at rest, may not respond to treatment). **Typical Signs and Symptoms include**: sub-sternal chest pain that may radiate, indigestion or nausea, shortness of breath, pain usually lasts 3-8 minutes, pain is usually relieved by rest and/or medication. (No oxygen)

Myocardial Infarction (MI) (Heart Attack) - Area of heart muscle deprived of blood flow/oxygen so that permanent damage occurs. **Typical Signs and Symptoms include**: sudden onset weakness, nausea and sweating without clear cause; pain (usually persists beyond 30 minutes), often described as squeezing (not always present); pain may radiate to jaw, arms (left), back or abdomen; anxiety; short of breath; cool, moist skin; cyanosis, arrhythmia; weak rapid pulse (may also decrease); pulmonary edema; cardiac arrest.

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[13] **ASA** (platelet inhibitor, anti-inflammatory) – **Actions**; blocks platelet aggregation. **Contraindications**; history of hypersensitivity. **Cautions**; GI bleeding and upset. **Dose:** 2 x 80 mg.

[14] **Nitroglycerin** (vasodilator) – **Actions**; relaxes vascular smooth muscle; acts primarily by reducing myocardial oxygen demand and to a lesser degree by increasing oxygen supply; actions within 60 seconds and duration up to 30 minutes. **Adverse side effects** (primarily due vasodilation); transient headache; hypotension; dizziness or fainting; flushing; reflex tachycardia or bradycardia

CARDIAC EMERGENCIES – ASSISTED MEDICATIONS PROTOCOL

CHEST PAIN – ASSISTED MEDICATION PROTOCOL (ASA and NITRO)
INDICATION – Presentation suggestive of cardiac chest pain (MI or Angina).

Assist with ASA after patient history and ensuring no ASA allergy or active gastro-intestinal bleeding (ulcers). Preferred is two chewable low-dose (2 x 80 mg).
No ASA if patient has taken his daily ASA dose (RS may top up to total 160 mg).

BEFORE ASSISTING WITH NITROGLYCERIN (patient's own) YOU MUST:

1. **Complete primary assessment and arrange transport**
2. **Obtain history (SAMPLE) and investigate pain complete (OPQRST) sufficient to suggest the pain is cardiac in nature.**
3. **Obtain a baseline set of vital signs (ensure BP above 100).**
4. **Physical exam for suspected cardiac emergency.**

CHEST PAIN - SUSPECTED MI or ANGINA – Assisted Medications – Sequence

Primary Assessment – LOC, ABC's, RBS, position for ease of breathing, loosen clothing, calm and reassure **Transport Decision** – Generally considered an unstable patient – arrange for transport, if PO2 < 95% then start high litre flow oxygen.

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History with SAMPLE and OPQRST – If suspected MI or Angina **assist with ASA** (provided no ASA allergy or active peptic ulcer or gastrointestinal bleeding)

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Baseline Vital Signs

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Physical Exam for suspected cardiac – Includes chest sounds, check peripheral edema in hands, neck and ankles

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Assist with patients own Nitro-glycerine provided protocol is met

- Locate patient's nitro-glycerine (tablet or spray) and ensure not expired
- **BP must be over 100 systolic** prior to each dose
- Has **not taken Viagra or Levitra in past 24 hours or Cialis in past 48**
- **Assist with up to three doses at 5 minute intervals** (not including doses prior your arrival) – **discontinue once pain is relieved or BP drops below 100 systolic**
- If spray – **do not shake, and prime (pump twice) before use**

NEUROLOGICAL DISORDERS

STROKE (CVA)[15] [16] [17] – TREATMENT PRINCIPLES

- **Complete primary assessment and arrange for priority transport**.
- **Face, Arm, Speech, Time (FAST) Time to transport** (3.5 hours for use of thrombolytic drugs)
- **Treat gently**, especially weak or paralysed parts.
- **If conscious, position supine with head and shoulders *slightly* raised and in a neutral position.** (alignment at midline to assist jugular venous return)
- **If reduced LOC, use oral airway (OPA), suction and position 3/4 prone unaffected side down** (if extended transport turn to other side every 30 minutes)
- **Oxygen should only be administered if PO2 is less than < 95% and/or the patient presents with obvious symptoms of shock (pale, cool, clammy skin) or SOB.** Assist ventilation as required
- Conduct **secondary assessment as for medical patient**.
- **Transport quickly** to medical aid. Earlier treatment = better outcome.
- **Monitor closely for changes** in GCS or other neurological deficit.
- **Do not assist the suspected CVA patient with medication.**

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[15] **Cerebrovascular Accident (CVA) / Stroke** – A non-traumatic brain injury caused by interruption of blood flow to an area of the brain. **May be occlusive or hemorrhagic in nature.** Presentation may vary depending on area of brain and degree of damage.

[16] **Transient Ischemic Attack (TIA)** – A temporary event with stroke-like symptoms, usually abrupt in onset, lasting anywhere from a few minutes to 24 hours. Assess and treat as per CVA. May be a warning sign that a more serious event (CVA) may follow.

[17] CVA - General Signs and Symptoms - Expect some of the following:

- **Facial droop** – one side of the face doesn't move as well as the other. Weakness, paralysis or loss of sensation of the face, arms, or legs, often on only one side of the body.
- **Arm drift** – have the casualty hold both arms out; one arm may not move or drifts down compared to the other.
- **Speech** – the casualty slurs words; uses incorrect words or is unable to speak or understand speech.
- Loss of vision or visual disturbances.
- Unexplained dizziness, confusion, unsteadiness or change in personality.
- A change in the level of mental ability, including the ability to concentrate.
- Severe headache or a change in the pattern of headaches normally experienced.
- Decreased consciousness, seizures or convulsions.
- Rapid and strong pulse.
- Respiratory distress.
- Pupils unequal in size or reaction.
- Loss of bladder or bowel control; or nausea and vomiting.

SEIZURES[18] – TREATMENT PRINCIPLES

Protect from further injury by moving objects away rather than restraining movements. **Protect the head without resistance**.

- **Protect airway. Assist breathing as required, use suction and ¾ prone positioning.**
- **Do not insert anything into mouth** or between teeth of the seizing patient.
- Provide **oxygen therapy and transport** during recovery period.
- **Consider potential of trauma** as a result of fall or seizure itself.
- Complete patient assessment. **If possible determine cause of seizure[19]**.

Most seizures are by their nature self-limiting and not life threatening, however **if seizure activity is prolonged or a series of seizures occur in rapid succession then a condition known as STATUS EPILEPTICUS exists**. This is a dire emergency, as the brain will be deprived of oxygen. **Rapid transport to medical aid is required.**

Oxygen should only be administered if PO2 is less than < 95% and/or the patient presents with obvious symptoms of shock (pale, cool, clammy skin) or SOB. Assist ventilation as required

[18] **Seizures –** A disturbance caused by massive electrical discharge in a group of nerve cells in the brain.

General Motor (Grand Mal) Seizures – Typified by loss of consciousness, muscle rigidity (tonic) then violent jerking of the body musculature (clonic) before recovery. Other signs may include rotation of the eyes, transient apnea followed by gasping respiration, flushing skin followed by cyanosis, increased salivation, clenching of the jaw with possible trauma to the tongue, and possible incontinence.

Seizures – Common Phases of Activity
Aura - A specific, characteristic sensation preceding episode and warning of its onset.
Seizure - The **Tonic (rigid)** phase is followed by the **Clonic (spasm)** phase. The entire tonic/clonic phase of the seizure would typically last 1-2 minutes.
Post-ictal State – The longest portion of the seizure. The stuporous state following the actual seizure, in which the patient can appear lethargic, somnolent, may yawn frequently, is confused or disoriented, and may complain of headache or sore muscles.

[19] **Possible causes of seizures** include: high fever (febrile in children); infections; poisoning; drug or alcohol abuse or withdrawal; hypoglycaemia; stopped taking medications; head trauma; CVA/neurological problem; hypertension; or may be idiopathic (without known cause)

DIABETIC EMERGENCIES[20]

TREATMENT PRINCIPLES

- **Complete primary assessment and arrange for transport**.
- **Establish and maintain airway** via patient position, OPA and suction.
- Administer **high percentage oxygen** via non-rebreather mask (10-15 lpm).
- Conduct **secondary assessment as for medical patient**.
- **If available assist patient to check blood glucose level via glucometer[21]**.
- **Assist with medication as per protocol** (next page).

Questions for the Diabetic
Have you taken your usual dose of medication today?
Have you eaten normally today?
Have you had any unusual activity, stress, or illness recently?

It is not critical in pre-hospital setting to diagnose type of diabetic emergency. Medical history may be gathered at scene, including presence of medic alert or diabetic medications.

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[20] **Diabetes Mellitus – disease marked by inadequate insulin activity in the body.**

- **TYPE 1 (Insulin Dependent)** – More serious but less common. Typical juvenile onset as pancreas produces little or no insulin. Managed by regular insulin injection.
- **TYPE 2 (Non-insulin Dependent)** – More common type - typically adult onset. Inadequate insulin production or decreased response to insulin. Managed by diet and oral medications that boost insulin. Some cases require supplemental insulin.

Insulin Shock (Hypoglycemia) – Very low blood sugar is the most common and critical diabetic emergency. Altered mental status & brain damage can occur quickly. Typical is recent history of insufficient food, heavy exercise and/or excessive insulin dosage. Typical Signs and Symptoms include: rapid onset of altered mental status; may be agitated, combative or appear intoxicated; pale, cool, moist skin; increased heart rate; headache; seizures or unconsciousness.

Diabetic Coma (Hyperglycemia/Ketoacidosis) – May be initial presentation of diabetes or result of non-compliance with medication. Body unable to access glucose so burns fat - leads to dehydration and acidosis. Gradual onset of hours or days and patient may ultimately lapse into coma. **Typical Signs and Symptoms of diabetic coma include gradual onset of altered mental status**; flushed, dry skin; increased heart rate; fruity odour on breath; frequent urination.

[21] **Glucometer** – normal blood glucose levels measured between meals would be between 5 – 7 mmol/ml; a blood glucose reading below 4.0 indicates hypoglycaemia and requires assistance with sugar. Giving oral glucose to the diabetic with altered mental status does not depend on a measured blood sugar level.

GLUCOSE

DIABETIC INSULIN SHOCK – ASSISTED MEDICATION PROTOCOL (Oral Glucose) – INDICATION – Known diabetic patient whose history and presentation suggests a diabetic emergency. Oral Glucose[22]

BEFORE ASSISTING WITH GLUCOSE YOU MUST:

1. **Complete primary assessment and arranged transport.**
2. **Obtain history (SAMPLE) and investigate chief complete (OPQRST).**
3. **Obtain a baseline set of vital signs, especially Blood Glucose if possible.**

ORAL GLUCOSE – Assisted Medication – Sequence

Primary Assessment – position to protect airway,

↓

Transport Decision – generally considered an unstable patient – arrange for transport

↓

History with SAMPLE and OPQRST – Determine history - insulin shock is probable

↓

Baseline Vital Signs

↓

Assist with Oral Glucose provided protocol is met

- For responsive patient (alert enough to swallow) with **suspected insulin shock assist the patient in taking sugar in some form** (e.g. glucogel, honey, sweet juice, etc.)
- The patient in insulin shock should improve within several minutes of sugar. This can be **followed with more complex carbohydrates** (e.g. whole milk, a balanced meal) for longer-term benefit. Continue transport to medical aid.
- **Unresponsive with suspected insulin shock begin transport. Place glucogel** (carefully, in small amounts) **between the cheek and gum** (use tongue depressor). Aspiration risk, **protect airway** with position (3/4 prone) and suction.
- If you cannot determine if the problem is insulin shock or diabetic coma, administer sugar to the patient.

↓

Continue with transport and ongoing assessments (vital signs, physical exam) – If no improvement within 5-10 minutes repeat the dose.

DO NOT assist with Insulin or diabetic oral medications. Seek medical advice and transport to medical aid.

[22] **Oral Glucose** (Gel, single dose packet) – **Actions**: increases blood sugar level; increases sugar available to the brain.

POISONING EMERGENCIES
Poison Control Centre – (604) 682-5050 / 1 800 567-8911

POISONING EMERGENCIES – TREATMENT PRINCIPLES

- **Assess scene and ensure safety of rescuers**. **Consider History**[23]
- Primary assessment with **particular attention to airway and breathing. Position for drainage. Oxygen via non-rebreather (10-15 lpm) or BVM**.
- **Never give anything by mouth to the patient with a reduced LOC**.
- Conduct **secondary assessment and seek medical advice during transport**.
- **Refer to WHMIS / MSDS and Poison Control Centre**.

Caustic or Hydrocarbon Ingestion

- **As directed by Poison Control Centre** or MSDS give milk or water.
- Provide **supportive measures and transport ASAP**.
- **DO NOT INDUCE VOMITING**.

Non-Caustic Ingestion

- **As directed by Poison Control Centre** or MSDS, if patient is alert and has an active gag reflex, give activated charcoal[24] to absorb poisons.
- Syrup of Ipecac is not carried by CCG and is not generally recommended.
- **Support airway and breathing** during transport.

Carbon Monoxide Poisoning

- Colourless, odourless, tasteless gas causes asphyxia because of blood affinity for CO.
- **Protect self, remove casualty from source, support airway and provide 100% oxygen**. Be prepared to assist with AR or CPR and transport to medical aid. (Definitive medical aid may include treatment in hyperbaric chamber).

Jellyfish Sting – PCC recommends flush with sea-water then carefully remove.

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[23] **History of the poisoning.**

- Was poison ingested, inhaled, injected or absorbed through the skin?
- What did the patient take or come in contact with? If ingested, was it caustic or a petroleum distillate?
- How much was taken and when? Did he mix substances?
- When did the symptoms begin? Did he take anything after? What was the vomitus like?
- Is there any headache, dizziness, hallucination or visual disturbance?

[24] **Activated Charcoal** (aqueous charcodote) – 250 ml bottle contains 50 g activated charcoal oral suspension in purified water – prevents absorption of some poison types; not effective for corrosives or petroleum products; shake well, use as directed by poison control – usual dose (child to adult) is 65-250 ml (13-50 g of activated charcoal).

Topical (Absorbed) Poisons

- **Refer to WHMIS / MSDS, Poison Control Centre**.
- **Protect yourself** from contact with the toxic agent.
- Carefully **brush excess from skin**.
- Remove patient's clothes and **flush thoroughly and copiously with water**.
- **Evacuate** as soon as possible.

Chemical Burns to Eye

- Begin **early, continuous (min. 20 min.) irrigation** with clean water or saline.
- **If necessary force eye lids open to allow flushing**.
- **Remove contact lenses if possible** (will trap chemicals & continue burning)
- If only one eye affected **do not allow cross contamination**.
- **Continue irrigation during transport**.

Paralytic Shellfish Poisoning (PSP) – Caused by the ingestion of bivalves harvested after a "Red Tide" algae bloom - This algae produces an extremely powerful toxin (saxitoxin) which paralyses by blocking neuromuscular transmission.

PSP Signs and Symptoms – usual onset of 10-30 minutes, may delay up to 10 hours.

- Initially numbness of lips, tongue, face and extremities.
- Headache, dizziness, drowsiness, muscle weakness leading to paralysis. All muscle with probable exception of cardiac and vascular is paralysed. **Death is due to respiratory paralysis.**
- Dysphagia, a choking sensation and difficulty in speaking may occur.
- Feeling of lightness. Possible visual impairment or temporary blindness.
- Nausea, vomiting, and abdominal pain. Low blood pressure, rapid pulse.

PSP – TREATMENT PRINCIPLES

No specific antidote. **Care is aimed primarily at ventilation and oxygenation**.

- **Maintain clear airway**, casualty may vomit. Preserve sample of vomitus or uneaten food for analysis. (May be frozen).
- **High percentage oxygen and positive pressure** ventilation with BVM or mouth to mask if needed. No lip to lip contact as rescuer could be affected.
- If able to swallow and not vomiting, **treat early after ingestion with activated charcoal** (footnote previous page).
- **Reassure patient**. He may be aware but completely paralysed. Don't give up!
- **AR (more likely) or CPR if necessary**.
- Keep warm & provide skin care over long transport.

DRUG & ALCOHOL EMERGENCIES

Tolerance – after repeated exposure, achieving the desired effect requires larger doses.

Addiction - Involves physical and psychological dependence, tolerance, and compulsive drug use. Characterised by overwhelming involvement in the use of a drug.

Alcoholic Syndrome - Consists of problem drinking and the stage of true addiction, in which abstinence from drinking causes major withdrawal symptoms.

Withdrawal Syndrome - Occurs after period of abstinence. Symptoms include insomnia, weakness, fever, seizures, confusion, hallucinations, nausea, rapid heart rate.

Delerium Tremens (DTs) - Life threatening last stage of withdrawal. Signs and symptoms include confusion, tremors, very high fever, dilated pupils, profuse sweating, vomiting and terrifying hallucinations.

Indicators for Immediate Medical Attention[25] (below)

Basics of Care

Emergency care for drug and alcohol emergencies is **generally supportive**[26]

- **Safety of rescuers is priority**.
- **Maintain airway** through suction, drainage position and OPA.
- **Support ventilations** as required and provide high percentage oxygen.
- **Maintain body temperature** within normal range – some drugs may cause change.

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[25] **Indicators for Immediate Medical Attention include** (Caution: The following signs can also mean illness or injuries other than drug or alcohol abuse).

- Signs of central nervous system depression; sleepiness, hard to awaken, coma, lethargy, decreased response to pain, impaired reflexes, co-ordination, judgement.
- High or low pulse rate, or an irregular pulse.
- Raised temperature.
- Extremely low blood pressure.
- Withdrawal that has become painful.
- Inappropriate or aggressive behaviour.
- Digestive upsets: gastritis, vomiting, bleeding, etc.
- Very slow or absent breathing.
- Tremors. Seizure or convulsion activity.
- Delirium tremens (DTs).
- Injuries to bones and joints that are unexplained and in various stages of healing.

[26] **In cases of suspected narcotic overdose the RS may seek a medical order to access Naloxone/Narcan** (narcotic antagonist) from ship's pharmacy (Annex A, page A-16, provided in 1 ml ampoules).

DEPRESSION, AGITATION, SUICIDAL STATES

Behaviour that presents a danger to patient or others or that delays or prevents appropriate care is disruptive and may precipitate a psychological emergency.

History

- **Is the environment dangerous** to you and/or others?
- Does the patient seem agitated, elated, depressed, or restless?
- Aggressive or violent behaviour? Do they talk loudly or in sarcastic manner?
- Do they use vulgar language? Easily provoked to anger? Limited attention span?
- Does the patient seem to be out of control, afraid or panicky?
- Evidence of alcohol or drug use? Criminal activity? Do they have a weapon?

General Care Guidelines

- **Listen carefully to the patient**.
- Assess the seriousness of the patient's thoughts and feelings.
- Accept what the patient has to tell you.
- Do not trust rapid recoveries.
- Be specific and deliberate in your actions.
- Never show disgust for the patient.
- Don't try to deny that the incident occurred.
- Never try to shock the patient out of a suicidal act.
- **Seek medical advice and transport to medical aid**.

Disruptive or Aggressive Patients

- **If danger exists, create safe zone, & call for assistance**. Remove any person or object from the environment that seems to be triggering the aggression.
- Identify yourself. Convey helpfulness, confidence and professional manner, rather than hostility or frustration.
- Move closer to patient only after adequate assessment and it appears safe to do so.
- Listen to, but do not take insults and abusive language personally.
- Respect the patient's difficulty in self-control.
- Acknowledge the patient's complaints.
- Use gestures and non-verbal messages carefully.

- Don't attempt to judge, label or criticise the patient.
- Don't isolate yourself with a potentially violent patient.
- Don't disturb with treatments or taking vitals any more than necessary.
- Don't turn your back on patient or position self between patient and doorway.
- Don't attempt to restrain unless adequate assistance to do so safely.

GYNECOLOGICAL/OBSTETRICAL EMERGENCIES

Normal labour is divided into three stages: dilation, expulsion and placental. Will usually proceed without complications. Contractions early are typically 10–20 minutes apart. By beginning of expulsion they are 2–3 minutes apart and last 45–90 seconds.

Signs of Pre-Delivery Emergency include; abdominal pain, nausea, vomiting; seizures; abdominal trauma; vaginal bleeding (pre-birth) or passage of tissue; signs of shock, weakness, dizziness or altered mental status; excessive swelling of face and/or extremities; hypertension; abnormal presentation.

OBSTETRICAL – TREATMENT PRINCIPLES

- **Practice discretion** and if possible have a female crew present.
- **Ensure an adequate airway**. High % O2. Support ventilations as required.
- If pregnancy involved and signs of shock, position and transport 3/4 prone or lateral with **LEFT SIDE DOWN** (reduces risk of supine hypotensive syndrome).
- Do not pack or apply direct pressure to vagina; cover with sterile dressings.

CHILDBIRTH – TREATMENT PRINCIPLES

- If remote, **seek medical advice** throughout. Have **patient history**[27] at hand.
- Keep mother comfortable. **Ensure a warm, clean, and private delivery area**.
- **Support and control the delivery**. Keep the umbilical cord clear from neck. Keep a firm grip, cradling infant's head and grasping feet.
- **Ensure airway** with head down for drainage and suction with bulb syringe.
- **Dry baby and wrap in warm towels / blankets**.
- Place the **baby on mother's abdomen and allow to nurse**.
- **Massage of uterus may limit post-partum bleeding**.
- After it stops pulsating clamp the cord in two places and cut.
- After placenta delivers, save, wrap and transport it with mother and baby.

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[27] **History**

- Has the patient experienced a similar problem before?
- Is the patient pregnant? If so, how far along?
- Which pregnancy is this? Any trouble with previous pregnancies/deliveries?
- Has the mother had any trouble with this pregnancy?
- Have the membranes ruptured? Is amniotic fluid stained or foul smelling?
- When did contractions start? Frequency, regularity and duration?
- Has the patient had prenatal care? If so, by whom?
- Does the patient have any underlying medical problems?
- Is the patient taking any medications?
- Does the patient have pain other than the contractions?

ACUTE ABDOMINAL EMERGENCIES

Acute Abdomen – **Abdominal pain that is sharp, severe and typically of rapid onset**. The specific cause is typically difficult to determine.

Peritonitis – The painful and potentially life-threatening inflammation of the peritoneum caused by infection, disease or trauma (rupture or perforation).

Abdominal Aortic Aneurism – Symptoms may be vague or obvious including pain, shock or pulsating mass. Handle gently and keep at rest (semi-sitting) during transport.

Signs and Symptoms of Acute Abdomen include; severe pain (local or diffuse) or abdominal tenderness; rigidity, distension or guarding; nausea or vomiting; signs of shock or of internal bleeding; fever.

Examination of the Abdomen – after primary survey, patient history and vital signs, **the following is specific to the abdominal exam.**

- Communicate with the patient as to your intent and observe closely the patient's overall appearance, position and response to any movement.
- Preferred position is typically supine with legs drawn up and knees flexed.
- Expose the area and assess visually noting any distension, discoloration or scars.
- Have patient point to area of greatest discomfort - **palpate this quadrant last**. Assess by quadrant, soft or rigid, guarding, tenderness or rebound tenderness.

INDICATORS FOR IMMEDIATE MEDICAL ATTENTION[28]

ACUTE ABDOMEN – TREATMENT PRINCIPLES

Diagnosis is not expected. Care given in the field is primarily supportive.

- If indicated begin **rapid but gentle transport** to medical aid.
- Maintain and **protect airway and provide care as for shock**.
- **Conscious patient in position of most comfort** (as found or supine with knees flexed. **If unresponsive position lateral** (with knees flexed) for drainage.
- **Do not give anything by mouth**.
- Do not give medication (unless directed by medical authority).
- Monitor vital signs during transport and document all changes.

[28] **Indicators for Immediate Medical Attention include**

- Patient gives **a poor general impression**.
- Is **unresponsive or responsive but not following commands**.
- Patient shows **signs of shock or distressed breathing**.
- Has **severe pain or any pain that lasts over 6 hours**.
- **If in doubt seek medical advice.**

DIVING RELATED INJURIES

Assessment of Diving Injuries

- The most serious of dive injuries are Decompression Sickness (DCS) and Arterial Gas Embolism (AGE) / Pulmonary Barotrauma. Not essential to determine which of these is present, as field treatment and transport considerations are essentially the same.
- In many cases and in some of the most serious of dive injuries DCS and AGE, with all their various presentations, will occur concurrently.
- Dive history[29] gathered at scene is useful in establishing a "level of concern" and will be very important to the dive physician as a part of determining chamber treatment.

Decompression Sickness (DCS) – typically related to longer, deeper, harder working dives; occurs if too much inert gas bubbles out of physical solution into blood or body tissues. **Symptoms of DCS** include (**Type 1**) skin rashes, joint pain or more seriously (**Type 2**) involves the CNS, and/or cardio/respiratory systems. Onset is typically slower (*may* be delayed for hours) than pulmonary barotrauma.

Pulmonary Barotrauma / Arterial Gas Embolism (AGE) - May be immediately life threatening. Over expansion of air or gas within the lungs, results in obstructed blood flow and damage to lungs, heart or brain. Most likely to develop during an improperly executed or rapid ascent with an abrupt and dramatic onset upon surfacing.

Rapid Field Neuro Exam[30]

To aid in the post dive assessment. If signs and symptoms of dive injury are obvious, conduct during transport to medical facility.

Diving Injuries - Patient Records

A written record of the diving injury must accompany patient to next level of care. This includes history of the dive up to the injury as well as the normal patient information.

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[29] **History -** Consider the diver, buddy, supervisor, dive log, dive computer and depth gage as sources of information.

- Depth? Bottom time? Repetitive Dives?
- Any unusual occurrence during dive?
- Did the patient ascend too rapidly?
- When did the diver first notice problems?
- Does the patient complain of headache, vertigo, visual disturbances, pain, paraesthesia or paralysis? Any seizure activity?
- Does the patient have any underlying medical history?
- Which gas was used (Air, Enriched Air Nitrox or other technical mixture)?

[30] **See Appendix VII - Rapid Field Neuro Exam**

DIVING INJURIES – TREATMENT PRINCIPLES

- **Recognition of possible problems** based on history and symptoms.
- Appropriate **airway management** (airways, suction and/or patient positioning).
- **Non-stop delivery of the 100% oxygen** (via non-rebreather mask or BVM), to be continued even if the symptoms seem to pass.
- **If AGE is suspected use PPV/BVM with caution** as there is risk of forcing more gas into circulation (via ruptured lung tissue).
- **Constant monitoring** of the patient for changes in condition.
- **Arrange for transportation to a medical hyperbaric facility**. Urgency for transport will depend on level of consciousness (the LOC may change). Do not delay transport of the urgent casualty for detailed on site assessment.
- Regardless of how minor the symptoms of decompression sickness may seem it is imperative that **the patient does not go back into the water** to attempt treatment or to complete omitted decompression stops.
- All patients suffering from possible barotrauma, air/gas embolism or decompression sickness, no matter how mild the occurrence, **should be seen by a diving physician**.
- **Gather and record an accurate history in writing** for the diving physician.

Patient Position – Dive Injury

A head down position is not generally indicated in the care of dive injuries. It may impair already difficult breathing and lead to increased intra-cerebral swelling.

Horizontal positioning, either supine or lateral (left side down may have a slight circulatory benefit) is preferred.

The patient's feet should only be higher than the head if all the following are met:

- It is a conscious casualty with suspected Barotrauma or Air/Gas Embolism.
- The patient's airway will tolerate it.
- The feet are only raised 6-8 inches higher than the head.
- It is done immediately or up to 20 minutes after the incident.
- It is maintained for no more than 10-12 minutes.

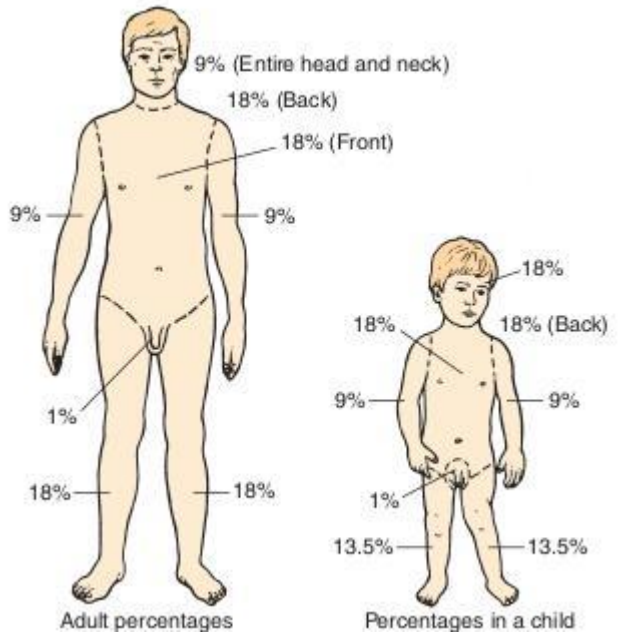
Vancouver General Hospital Hyperbaric Chamber

Direct Line – 604-875-4033
24 Hours – 604-875-5000

HEAT RELATED INJURIES - BURNS

Cause may be thermal, electrical, chemical, or radiation and classified by degree.

- **Superficial** (1st Degree) - Dry, painful, red, blanches easily. Epidermis only.
- **Partial thickness** (2nd Degree) - Moist surface, red or mottled, blisters, painful and blanches to pressure. It involves the epidermis and part of the dermis.
- **Full thickness** (3rd Degree) - Characterised by dry, hard and leathery, pearly white or charred skin with decreased pain (destruction of nerve endings).
- **Burns Considered Critical[31] are noted below.**



Taber's Cyclopedic Medical Dictionary, ed. 21

"Rule of Nines"

	Adult	Infant
Head and Neck	9%	18%
Anterior Trunk	18%	18%
Posterior Trunk	18%	18%
Each Upper Extremity	9%	9%
Each Lower Extremity	18%	13.5%
Genitalia	1%	1%

The palm method can also be used (palm surface of patient's hand = 1% of body area)

THERMAL BURNS – TREATMENT PRINCIPLES

- Protect self. Remove from heat**.** Extinguish clothing, don't remove if adhering.
- Complete primary assessment. Ensure airway and adequate respiration**.**
- **Cool with cool clean water for 10 minutes** maximum. Be aware that large surface cooling may lead to hypothermia.
- After cooling, cover with clean (sterile if possible), dry dressings.
- Protect against shock and infection.
- Remove constrictive items (e.g. rings, watches) before swelling starts.
- No heat trapping ointments.

[31] **Burns considered critical include**: burns about the face or involving airway or respiration; burns to the hands, feet, genitalia, or encircling burns; full thickness burns to > 10% of body; partial thickness burns to > 30% of body; all significant electrical or chemical burns; moderate burns on patients very young, very old or with pre-existing medical conditions or complicated by other injury.

Electrical Burns – Ensure safety of scene – shut down power. Current will take most direct path to exit body. Assess for entry and exit. Heart and breathing may be affected.

Chemical Burns – Refer to WHMIS/MSDS. If unknown flush copiously minimum 20 minutes (dry powder brush off then flush). Remove clothing while flushing.

HEAT RELATED DISORDERS

Heat Cramps - Muscular pains and spasms that occur when body loses too much electrolyte during profuse sweating or when inadequate salt is taken into the body.

HEAT CRAMPS – TREATMENT PRINCIPLES

- **Remove from hot environment** and put in resting position.
- **Replace fluids by mouth** (e.g. water or diluted sports drink)

Heat Exhaustion – A mild heat illness, typically occurs in an otherwise fit person involved in physical exertion in a hot environment, resulting in excessive loss of fluids and/or salts. The resulting disturbance of blood flow presents as a mild form of shock. Signs and symptoms typically include: skin that is pale, cool, moist or clammy; normal or near normal body temperature; often a rapid pulse; weak, dizzy or faint; headache or cramps; dry mouth and thirsty.

HEAT EXHAUSTION – TREATMENT PRINCIPLES

- **Remove the patient from the source of heat and cool them carefully**.
- **Put at rest** (supine with legs elevated is advised), **handle gently** and transport if condition appears serious.
- **If responsive have him drink cool water or sports drink**.
- If decreased level of responsiveness or if vomiting do not give fluids.

Heat Stroke - life-threatening emergency results when the heat regulating mechanism of the body breaks down and fails to cool the body sufficiently.

May present as **Classic** (lost ability to sweat) or **Exhertional** (may sweat profusely). **Signs and symptoms** include: **hot, flushed, reddish skin**; unequal and/or dilated pupils; very high body temperature; decreased LOC; seizures; pulse that may be strong (exhertional) or weak (classic) and rapid.

HEAT STROKE – TREATMENT PRINCIPLES

- **Remove from source of heat stress**. Use available means to **aggressively cool patient**. Slow cooling if patient starts to shiver (shivering produces heat).
- **Oxygen and maintain airway**. Convulsions and vomiting may occur.
- **Help the conscious patient to re-hydrate with cool fluids**.
- **Monitor vital signs and continue cooling during transport** to medical aid.

HYPOTHERMIA

Lowering of the body core temperature (normal is 37°C).
For field treatment, hypothermia is assessed as MILD, MODERATE, or SEVERE.

Moderate to Severe – Assessed as hypothermic if any of the following are present:

- A history that suggests severe hypothermia (e.g. prolonged immersion).
- Little or no shivering despite being obviously cold.
- Impaired judgement, lack of co-ordination, decreased mental status, unconsciousness.
- Depressed vital signs (e.g. slowed weak pulse and breathing rates).
- Body rigidity or stiffness.
- Reliable measured core temperature below 33°C.

Circum-Rescue Collapse – Significant drop in blood pressure and subsequent collapse or death – Vertical position during recovery has been described as a factor.

Core Temperature After-drop – The continued decline in core tissue temperatures after removal from the cold stress.

HYPOTHERMIA – TREATMENT PRINCIPLES

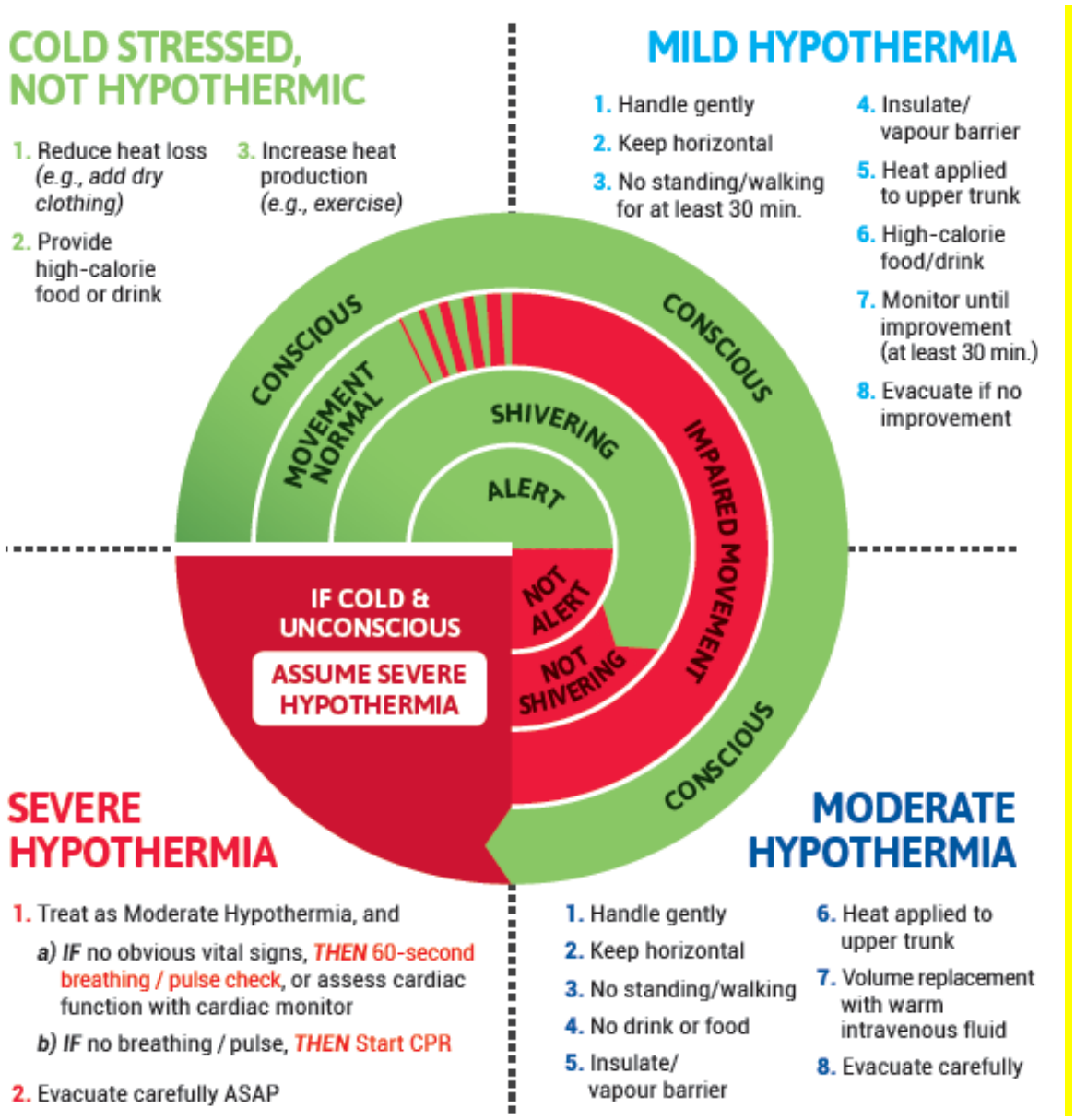
- If possible **recover and treat in horizontal position**. **Handle gently** and avoid casualty assisting in own rescue (risk of ventricular fibrillation).
- If recovered from water anticipate and **manage for fluid in airway**.
- Move to or **provide shelter, maintaining horizontal position**.
- **Prevent further heat loss** by removing wet clothing, applying **hot packs to external body core** (back and trunk), and **wrapping in blankets**.
- If apparent cardiac arrest **assess pulse (carotid artery) for up to 30 seconds per side**.
- If cardiac arrest confirmed, CPR at normal rate. **(AED Protocol – One shock max.)**
- Avoid rapid re-warming
- Watch for after drop
- If mild, transport to medical aid is not required provided no other medical problems.

Hypothermia Core Temperature

37°C normal, ↓35°C considered hypothermic, ↓30°C likely unresponsive and stopped shivering. Low reading tympanic thermometers are intended for use once the casualty is in a stable environment (the tympanic thermometer will not function if cold, and may also give a false low reading if inaccurately placed in the ear canal).

Hypothermia Assessment Card

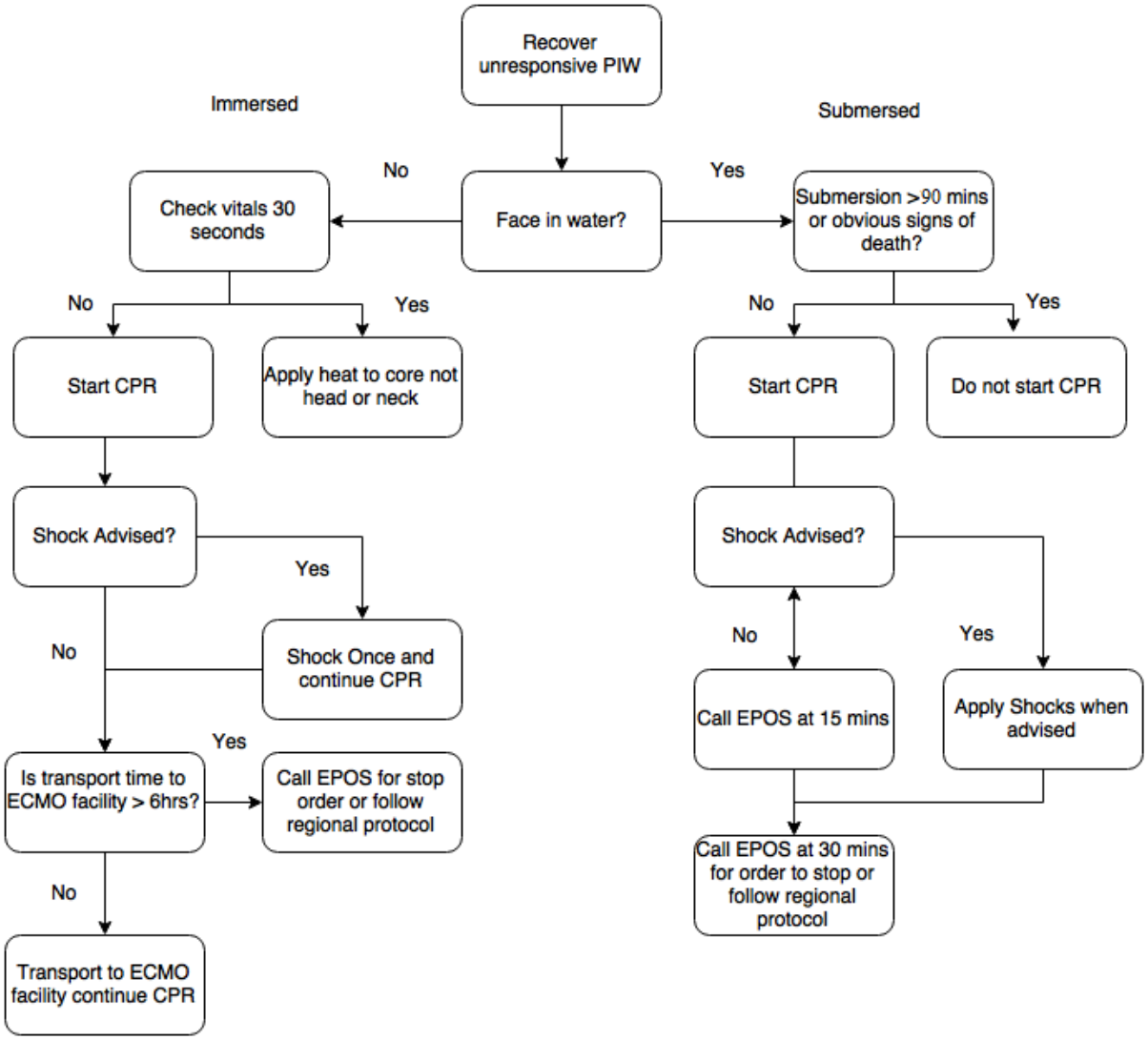
1. From outside ring to centre: assess Consciousness, Movement, Shivering, Alertness
2. Assess whether normal function, or impaired or no function
3. Treat according to appropriate result-quadrant
4. Treat all traumatized cold patients with active warming to upper trunk



COLD WATER NEAR DROWNING

Recovering a person in the water (PIW) that is unresponsive

There are circumstances that warrant careful consideration when deciding not to start CPR or to follow our thirty minute and no shock advised protocol to cease CPR. If it is not clear how long the patient has been submersed and there is a reasonable chance that they could have been breathing (wearing a pfd) then CPR should be started.



[32]

[32] Hospitals with ECMO/CPB:
1. Vancouver General Hospital, ECMO for accidental hypothermia guideline in place, contact ICU doctor on call. **2. BC Children's Hospital**, provincial ECMO center for patient's <17 y/o, contact PICU doctor on call. **3. Kelowna General Hospital**, ECMO for accidental hypothermia is provider dependant, contact ICU doctor on call. **4. New Westminster Royal Columbian Hospital**, ECMO for accidental hypothermia is provider dependant, contact ICU doctor on call. **5. Vancouver St. Pauls' Hospital**, ECMO for accidental hypothermia is provider dependant, contact cardiac surgeon on call**. 6. Royal Jubilee Hospital,** CPB for accidental hypothermia is provider dependant, teleconference cardiac surgeon & ICU on call..

FROSTBITE

Freezing of tissue with damage caused by crystallization of water in tissue.

Superficial (frost-nip) – Skin only involved, white or grey patches, firm but not hard. Do not rub. Re-warm gradually with body heat or warm (not hot) water. Cover with dry sterile dressings. Do not allow to re-freeze.

Deep Frostbite – Skins feels hard and cold, white or grey and may involve entire digit or body part. Protect from further injury, insulate against further cooling or warming and transport to medical attention. Re-warm part only if prolonged transport and no risk of re-freezing. Consult with physician prior.

SEA SICKNESS

Motion sickness that is particular to the marine environment. It may be completely debilitating or lead to hypovolemic shock.

Signs and symptoms include nausea and vomiting preceded by; discomfort, anxiety, sighing, yawning, increased salivation, hyperventilation, pallor, cold sweating, drowsiness, dizziness, headache, and fatigue.

SEA SICKNESS – TREATMENT PRINCIPLES

- Move the patient to a central area of the ship to **minimize motion**.
- Ensure that the patient has **adequate fresh air**.
- Advising the patient to focus on a distant object may be helpful.
- **Lying down with head still and eyes closed may help relieve symptoms**.
- Be aware the patient may become dehydrated.
- Make every effort to **ensure the comfort of patient**.
- **If not relieved, arrange for transport to medical aid.**
- **Consider anti-emetic[33] drug therapy** (to be effective oral medications would typically be taken 30-60 minutes prior to motion).
- **Seek medical advice or orders if required** (if seasickness is acute these medications may need to be administered via suppository or intra-muscular injection).

[33] **Sea Sickness Medications** (anti-emetics) carried on Coast Guard ships (CGFLS 400.00.07 Annex A, March 2013 revision, pages A-20-21) include;

- Dimenhydrinate Suppositories (Gravol). RS Code X (scale A, B, C and D)
- Dimenhydrinate Tabs (Gravol). RS Code X (scale A, B, C and D)
- Dimenhydrinate Injection (Gravol). RS Code Z (scale A and B)

HEAD INJURIES

Skull Fracture – May be open or closed. If open a risk of infection exists. If closed potential exists for swelling and increasing intra-cranial pressure. May be associated leakage of cerebrospinal fluid from ears or nose, Battle's sign or racoon eyes.

Concussion – Temporary disturbance of normal brain function. Effects ranging from confusion to complete unresponsiveness appear immediately or soon after impact and then disappear.

Contusion / ICP – Bruising and swelling of the brain that can accompany concussion. Permanent brain damage can result and Intra-Cranial Pressure (ICP) may progress leading to permanent disability or death.

Signs and Symptoms of Contusion / ICP may include:

Decreased or falling level of conscious, sometimes following a lucid interval

- High or rising blood pressure
- Bradycardia (slow pulse)
- Respiratory depression or irregular breathing
- Non-reactive or unequal pupil(s)
- Paralysis, may be total or partial
- May have blood or fluid from nose or ears

HEAD INJURIES – TREATMENT PRINCIPLES

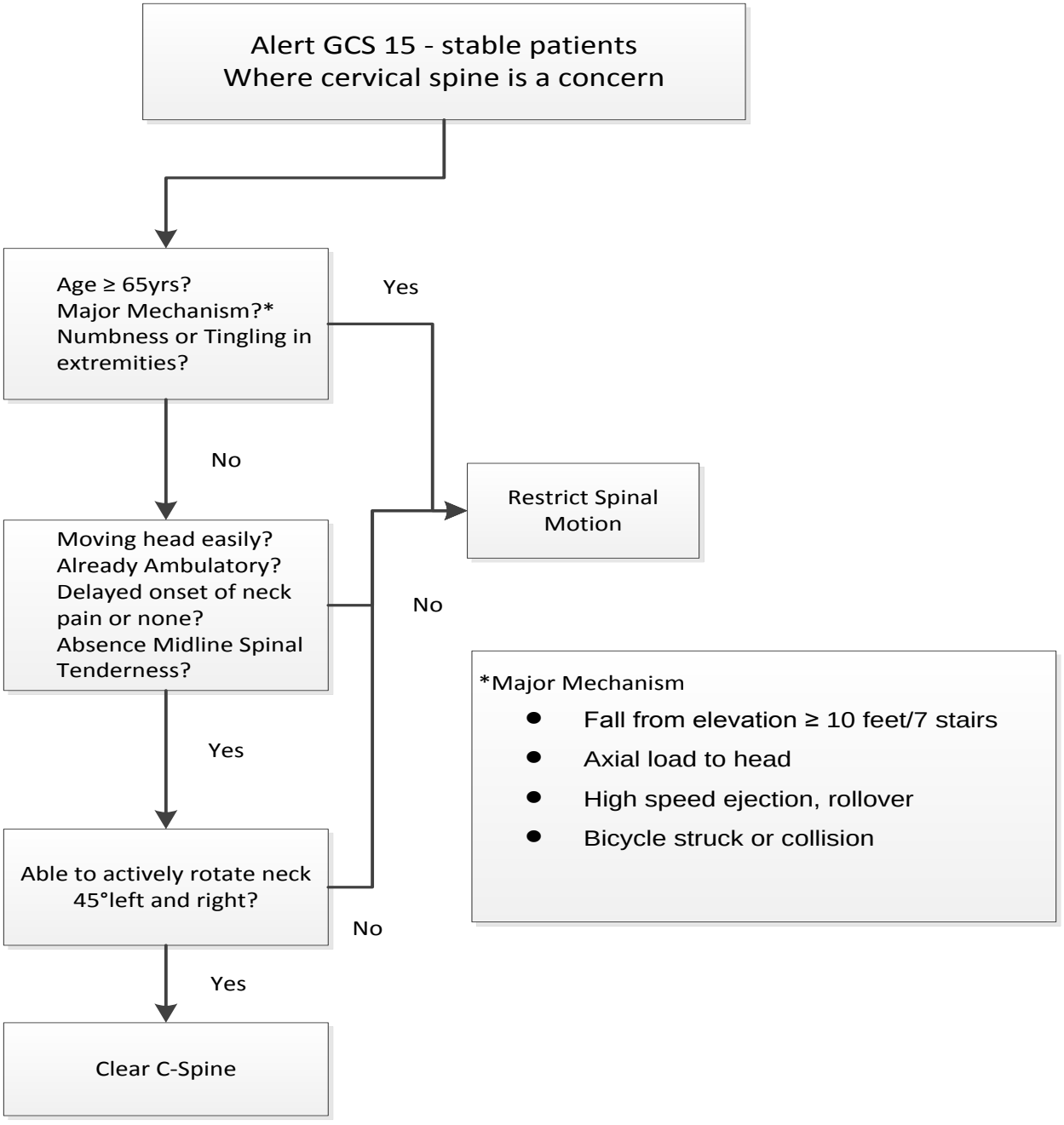
Recognise potential based upon mechanism of injury. **If severe mechanism is present, or if neck pain is present or if unresponsive treat as for cervical spinal injury.**

- **Manage airway** via use of jaw thrust, clearing of foreign bodies from mouth, suction and be prepared to roll for drainage.
- **If patient is hypoxic PO2 less than 94% or in obvious shock then administer oxygen at 10 lpm until PO2 improves**
- **If signs of inadequate or distressed breathing are present provide positive pressure ventilation at rate of 12 - 20 per minute**.
- **Monitor the concussion/head injury patient carefully**. If evidence of ICP develops, consider a life-threatening emergency and transport rapidly.
- Do not apply direct pressure over open or depressed skull fracture.
- Do not attempt to stop flow of blood or CSF from nose or ears.
- If no sign of low blood pressure then elevating the head end of the stretcher may also help reduce ICP.

SPINAL MOTION RESTRICTION

Stages of spinal patient care:

1. Initial treatment as found at the scene[34], including extrication
2. Short term transport to a stable environment (e.g. Rescue vessel)
3. Long term transport (over 30 minutes) to medical assistance



[34] If you must leave unresponsive spinal unattended (e.g. to get help or in a multi-casualty incident) use **Haines recovery position** (arm extended above head prior roll) to better support the head and neck.

Spinal Immobilization

Carry out when a spinal injury cannot reasonably be ruled out. This would include: unwitnessed unconsciousness with possible trauma, all trauma patients with reduced LOC, and conscious with deficit(numbness, tingling, weakness) or neck or back pain.

Hard Collar

- The head and neck must be in neutral spinal alignment (i.e. supine or seated upright).
- If rescuer meets resistance to this alignment or the casualty experiences pain then immobilise the neck in positon found (without collar)
- Proper collar sizing is critical. Too short a collar will not properly immobilize the neck while too long will cause hyperextension.

Backboard Sequence – Unstable Patient

Generic example of the spinal immobilization sequence, as for an unstable patient.

Manually secure head

↓

Complete primary assessment with critical interventions (airway,O2, ect.)

↓

Apply cervical collar to head in neutral position and package legs

↓

Log roll (check back) to backboard or scoop patient (pad if need be under heard)

↓

Secure chest and legs with spider straps or other suitable strap system

↓

Head is secured to board last (and released first) with tape or head securing device

↓

Reassess patient status and begin transport

- If you must leave a unresponsive spinal unattended (eg. To get help or multi-casualty incident) **use Haines recovery position** (arm extended above head prior to roll) to better support the head and neck.

LONG TERM TRANSPORT (over 30 mins) Remove Spine board /Clamshell

Once patient is extricated from scene and secure on ship or lifeboat then remove spine board or clamshell. Only leave clamshell on if stabilization on bunk or bed is needed.
The **objective of packaging for long-term transport is to minimise patient aggravation during transport** and to prevent bedsores (decubitus ulcers).

- Patient correctly fitted with a hard cervical collar and patient clothing removed
- Remove Spine board replace with two 3-fold blankets, overlaid with a folded wrinkle free sheet, padding for body hollows and a second sheet to wrap patient
- Patients clothing will be removed – use cotton or linen sheets for skin contact
- Lift patient using the scoop stretcher and place onto the bed
- Remove the scoop from under the patient and replace under the two blankets
- Ensure no wrinkles under patient and that all body hollows are padded for support
- Tightly rolled blankets or other appropriate head support in place
- Place rolled blanket on either side of patient and pad between legs.
- Use clam shell to move patient or stabilize on bed. Pad under straps at pressure points. Do not over-tighten or restrict ability to breathe.
- Secure the head using fibreglass tape. (head is secured last & released first)

OTHER LONG TERM CARE CONSIDERATIONS

Assessment and Documentation – Record details accurately. Reassess and note all changes. Give notification to hospital and seek medical advice.
The Environment – Make location comfortable for patient and accessible for caregiver.
Rest – Rest is conducive to healing. Efforts to reduce pain and maintain body temperature will help promote rest.
Respiratory Care – Inactivity can result in accumulation of fluids in the lungs. Encourage deep breaths & cough frequently to maintain respiratory function.
Positioning – Maintain position of greatest comfort as injuries allow.
Skin Care for Spinal – Padding as noted above, promote circulation by passive movement and massage, alternate stretcher positions, and keep bedding clean and dry.
Maintain Hydration – Patients who can tolerate should drink small amounts fluid regularly. If surgery likely within 8 hours nothing by mouth. Seek medical advice.
Maintain Nutrition – If patient wants to eat give small amounts of high energy food (cereals, bread, soups). If surgery within 8 hours, nothing by mouth. Seek advice.
Urination and Bowel Care – If required use bedpans, urinals or improvised methods (e.g. diapering). Provide privacy. Check bedpan contents for abnormalities.
Administering Medication – If any question, consult with medical direction. Have all documentation and list of available medications at hand.

MUSCULOSKELETAL INJURIES

Assessment Considerations

- Consider type and degree of force (mechanism of injury). May be open or closed.
- Assess patient as a whole. Consider possibility of spinal or serious underlying injury.
- Steady and support injury, remove/cut away clothing as necessary to assess[35].
- More critical to assess severity of injury than "diagnose" the specific type of injury.

Objective of Splinting - Prevent aggravation, reduce pain, minimise complications.

MUSCULOSKELETAL - GENERAL CARE and SPLINTING PRINCIPLES

- **Maintain manual support above and below injury** until limb is fully immobilised.
- **Assess pulse, motor, and sensation before and after splinting** and during transport.
- **Control bleeding and dress wounds before splinting**.
- **Apply cold if circulation not impaired (10 minutes on 5 minutes off)**.
- Lack of circulation below a fracture should be considered a limb threatening injury.
- Realignment may be required to return circulation or to allow splinting/transport, use gentle traction during return to anatomical. If resistance, immobilise in position.
- **Immobilise the joints above and below** a long bone injury.
- In general **secure splints from stable** (above injury) **to less stable** (below).
- **Pad all rigid splints** to prevent pressure and discomfort.
- **Complete immobilisation before moving** unless there is an immediate hazard.
- Use **appropriate pain management techniques**[36].
- Use appropriate materials
- **When in doubt, splint**.
- Use traction splint[37] as directed for lower limb fracture.

Joint Injury or Dislocation

- **Immobilise in position found unless distal pulses are absent and transport is extended (over 30-minute transport)**. Seek medical advice.
- **Immobilise the bones above and below** a joint injury to maintain stability.

Sprains and Strains

- Consider **R.I.C.E.: Rest**; **Immobilization** – support and limit aggravation; **Cold** – cold to reduce swelling (10 minutes on / 5 off); **Elevation** – if injuries allow.
- **If severe, treat as fracture**. Immobilise to transport.

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[35] **General Signs & Symptoms include:** pain or tenderness; deformity, angulation or shortening; loss of function/guarding; weakness, instability; swelling, discoloration; grating or crepitus

[36] See Appendix IX - Entonox

[37] See Appendix X – Sager Traction Splint / Other Splinting Materials

CHEST INJURIES

- Categorised as either open (penetrating) or closed (blunt).
- Mechanism of injury is key to assessment. May also cause spinal injury.

CHEST INJURIES – TREATMENT PRINCIPLES

- **Focus on support for respiratory distress with attention to airway, high flow oxygen, positive pressure ventilation if required (with caution if possible pneumothorax), good patient position[38], rapid transport to medical aid, and some specific interventions**.

Pneumothorax

- Air in the pleural space, causing collapse of lung.
- Transport Rapidly
- May be **open or closed**.
- **If open** c**over with absorptive dressing**. Watch closely for development of tension pneumothorax.
- For penetrating chest injuries **consider the presence of an exit wound**.
- **Closed** pneumothorax may occur following blunt trauma or spontaneously due to a congenital defect. **Recognition, ABC's and transport are key**.

Tension Pneumothorax

- **Progressive life-threatening build-up of air** in thoracic cavity. May collapse first the injured lung; then compress the heart, major vessels and uninjured lung.
- May occur as result of open or closed pneumothorax.
- Signs include **severe respiratory distress**, shock, distended neck veins, and tracheal shift to the uninjured side.
- **Transport rapidly and monitor closely** for changes in respiratory status or LOC.

Hemothorax

- Similar to pneumothorax but involving blood in the pleural space rather than air.

Simple Rib Fracture

- Not usually life threatening unless damage to underlying lung.
- Very painful, especially on movement. Rapid shallow breathing is common.
- Rule out serious underlying injury; provide broad support as with sling and swathe.

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[38] **Position**

- If injuries allow, position the conscious chest injury patient, semi-sitting inclined to the injured side.
- If spinal injury is suspected maintain casualty in supine position.

Chest Injuries - Flail Chest

- Typically involves a significant blunt trauma.
- Two or more ribs broken in two places, resulting in an unstable segment that may move paradoxically to the rest of the chest wall.
- **Objective is to support ABC's and stabilise unstable segments**. Use hand pressure initially and secure bulky padding over segment to reduce movement.

Pericardial Tamponade

- Traumatic injury (most often penetrating) injury to the heart causing bleeding within the heart sac, reducing the hearts ability to pump.
- Watch for signs of profound shock, a narrowing pulse pressure, distended neck veins, etc. Support ABC's and begin rapid transport to medical aid.

Pulmonary and Cardiac Contusions

- Caused by blunt trauma to the chest wall.
- May be progressive as swelling occurs. Assess carefully and monitor for changes during transport to medical aid.

Thoracic Aorta Tear

- Deadly injury typically caused by sudden deceleration.
- ABC's and basic life support during rapid transport.

Blast Injury

- Pressure wave enters airway causing lung damage and rupture of alveoli.
- **Injury may not at first be obvious. Progressive and potentially life threatening**.
- If breathing distressed provide positive pressure ventilation but do not over-ventilate.

ABDOMINAL INJURIES

- Wound may be either open or closed.
- Severe risk of shock and infection due to damage to internal organs.
- Consider mechanism of injury and be suspicious of internal bleeding.

ABDOMINAL INJURIES – TREATMENT PRINCIPLES

- **Treat for shock**. Oxygen, blankets, nothing by mouth.
- **Control bleeding** and dress open wounds.
- **Do not replace any protruding organs**. **Protect and cover** with sterile dressing, moisten with sterile saline, then apply an occlusive dressing (e.g. foil blanket).
- Position with knees flexed may take pressure off, provided no injury aggravation.

WOUND CARE

MAJOR BLEEDING – TREATMENT PRINCIPLES

- Use **appropriate PPE / BSI procedures** to minimize risk to rescuers.
- **Control external bleeding with direct pressure** and keep the **patient at rest.** Use elevation with caution as this may aggravate injury.
- Assess pulse, motor, and sensation before and after bandaging.
- Don't remove blood soaked dressings; add additional dressings with pressure on top.
- **If direct pressure does not control deadly bleeding to an extremity, a tourniquet should be applied**. Apply tourniquet (or suitable broad material – rubber or elastic bandage, BP cuff, etc.) above injury site; once applied it is left on – do not cover. Record time on tourniquet. Priority transport and seek advice.

Minor Wounds

The following actions will **promote healing and limit risk of infection**.

- **Wash hands** and put on exam gloves.
- **Expose and examine** wound. Be prepared to refer to medical aid if required.
- **Clean away gross contaminants**, wiping away from edges. Soap and water for cleaning wounds. Antibiotic ointments may be used for abrasions/superficial wounds.
- **Cover** with sterile dressings. **Keep dressings clean & dry**.
- If tetanus immunization is past 10 years, should receive booster within 24 hours.
- Wound site to be reassessed and **dressings changed every 24 hours or if soiled**.

Indications of Wound Infection

- Redness, swelling, tenderness, puss discharge, heat around area, swollen lymph nodes, fever, and red streaks extending from area.
- Some redness/swelling is normal. If more severe signs, refer to medical aid. Infection may progress rapidly & have serious consequences. If remote seek advice and consider that antibiotics from ship's pharmacy may be accessed on Dr's orders.

Refer for Stitches

- In general stitches are required for any wound that gapes, particularly if near a joint, on hands or feet, in a hairy area, around the face or where scarring will be a problem.
- The sooner the better for stitches to be effective (ideally within 4 hours).

Amputations

Wrap in slightly moist gauze and keep part cool during transport with patient.

Imbedded Object

Do not remove. Use bulky dressings to support in place and indirect pressure to control bleeding. Imbedded object in the cheek that risks airway may be removed.

Wound Care - Face, Scalp and Neck Wounds

- Bleeding control is by direct pressure. Keep airway clear.
- All unconscious patients are treated as for cervical injuries.
- **Control bleeding from torn jugular vein with occlusive dressing**.

Facial Fractures

- Use suction and positioning to ensure a clear airway.
- Suspect cervical injury. Treat as such if it cannot be ruled out.
- Dress all open wounds. Control bleeding with gentle direct pressure.
- **Do not compromise airway for immobilisation of fracture**.

Nose Bleed

Sit down, **lean forward and pinch nostrils**. Apply cold. Avoid blowing nose. If bleeding continues seek medical aid. Note: If skull fracture is suspected, don't try to stop bleeding, cover loosely.

Injuries to the External Ear

Treat as for soft tissue injury. Save any avulsed part and transport with the patient.

Loss of a Tooth

- Preferred care is to place knocked out tooth in milk for re-implantation by dentist. Saline, clean water or patients own saliva also OK. Do not touch roots of tooth.
- Control bleeding of gum.
- Transport patient and tooth ASAP for best chance of successful implant.

EYE INJURIES – TREATMENT PRINCIPLES

- **Assess in well-lit area**. Instruct patient **not to rub eye**.
- For **loose foreign objects, do not cover the cornea; make one attempt to remove** using the corner of a moist tissue or dressing, or flush with water.
- For **imbedded foreign objects cover and protect against movement**.
- Do not try to force the eyelid open except for the need to wash out chemicals.
- **Flush chemical burns for minimum 20 minutes**. Remove contact lenses.
- Do not put salves or medicine into the eye unless directed by physician.
- **Do not attempt to remove blood or blood clots** from the eye.
- **Do not apply pressure to the eyeball**.
- If extruded eyeball, protect and cover with moist dressings.
- **Cold packs can be used to limit swelling** in case of bruising about the eye.
- For intense light burns (e.g. arc flash) cover both eyes with cool moist dressings.
- **Serious eye injuries are stretcher patients**. If possible cover the uninjured eye – be aware that covering both eyes may upset the patient so explain everything you do.

MULTIPLE CASUALTY INCIDENT (MCI)

Disaster is an event that places excessive demands on responders, typically resulting in multi-agency response. An incident with **three or more patients is known as a multiple-casualty incident.**

Keys to success include: clearly established command; appropriate scene assessment; good communication between agencies; effective triage and accurate casualty tracking.

Key CCG Personnel in a disaster / multi-casualty incident include:

- On-Scene Commander – as designated by JRCC
- Transport Officer – responsible for transport and tracking of casualties from scene
- Triage Officer – responsible for triage at the scene – first aiders report to triage

Triage

Triage[39] – Objective is to sort based on priorities[40], in order to maximize survivors. The **START** (**S**imple **T**riage **A**nd **R**apid **T**reatment) method is described on the next page.

Priorities for Evacuation - Are determined by scene stability.

Order if scene stable:	**If scene is unstable:**
Urgent – red	Uninjured – white (except those helping)
Delayed – yellow	Minor – green (except those helping)
Minor – green	Delayed – yellow
Uninjured – white	Urgent – red
Deceased – black	Deceased are not evacuated

General Rules of Triage

- Triage to take no more than 30 seconds per patient.
- Life over limb. Interventions limited to immediate life saving manoeuvres.
- Airways may obstruct any time; if patient is unresponsive and unattended, reposition.
- A.R. and CPR: Consider the cost. (See AED Protocol)
- Patients in shock tolerate transportation poorly: treat before and during transport.

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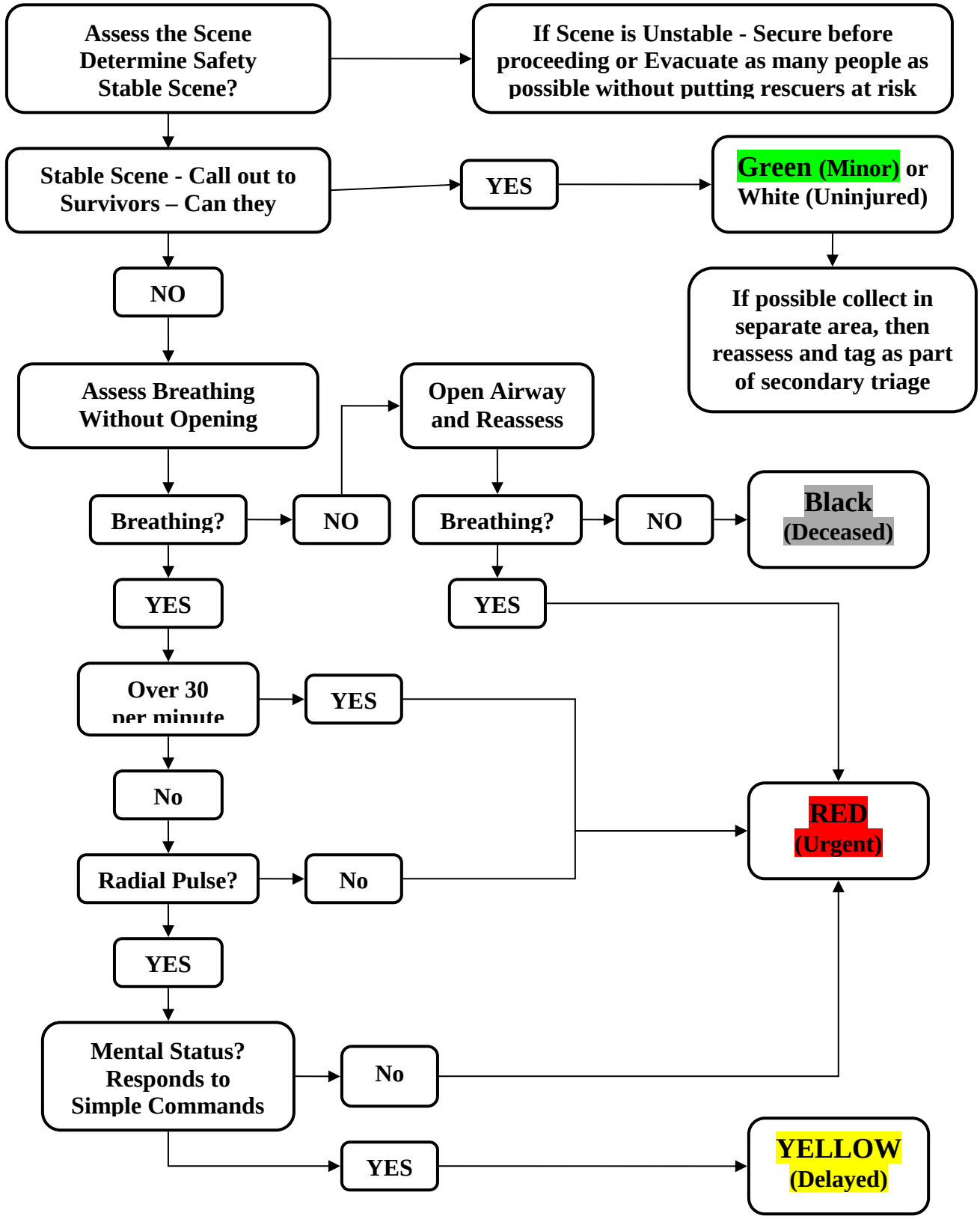
[39] **Triage Tags** – use of coloured triage (surveyors) tape is best for first triage (tear off long strip, secure to wrist & keep piece to aid counting); METTAG if carried is suitable for secondary triage

[40] **Triage Categories**
Red (Urgent) – critically injured with problems that will require immediate intervention (obvious signs of shock including breathing rate over 30, absent radial pulses, or inability to follow simple commands).
Yellow (Delayed) – require medical attention and stretcher transport but life is not at risk.
Green (Minor) – injured but can walk and care for them-selves.
White (Uninjured) – involved in incident but not injured.
Black (Deceased) – deceased or such catastrophic injuries that they will not survive to be transported.
Grey (Missing) – as per National SAR Manual, NOCL – for verbal report only, not tagged

START TRIAGE MODEL



APPENDIX I - VITAL SIGNS – Normal Values for Adult

LOC (Level of consciousness)

Glasgow Coma Scale scores out of 15 (see Appendix III)
Is person oriented to person, place and time

PULSE

Easily palpated at major sights (e.g. carotid, radial, femoral)
Resting rate 60 - 80 beats per minute, and a regular rhythm should be felt

RESPIRATION

Breathing 12 to 20 times per minute should be without obvious effort

SKIN

Normal is pink, warm and dry. For deeply pigmented persons assess perfusion of mucus membranes and conjunctiva of the eyes. Consider environmental factors.

BLOOD PRESSURE

Normal systolic B/P for adult is considered to be up to 140 mm Hg
Diastolic B/P norm 60-90 mm Hg
Palpated BP (for noisy environment) recorded as systolic/P (e.g. 120/P)

To approximate minimum **systolic** B/P by pulses

- palpable radial pulse - at least 90 mm Hg
- palpable femoral or brachial - at least 70 mm Hg
- palpable carotid pulse - at least 60 mm Hg

TEMPERATURE

37 Celsius or 98.6 Fahrenheit with some fluctuation
Below 35°C considered hypothermic, above 38°C considered feverish

PUPILS

Should be equal in size and react briskly to light

PULSE OXIMETRY

Normal is 96-100%. Below 95% indicates hypoxia & need for supplemental O2.

CHEST SOUNDS

Should be present with equal clear air entry. Absent, diminished or unusually noisy chest sounds indicate problem.
Assess sounds at second intercostal space mid-clavicular line, and fourth intercostal space at mid-axillary line. On back off scapula is preferred for seated patients.

BLOOD GLUCOSE

Normal levels are between 4-7 mmol/l

APPENDIX II - VITAL SIGNS – Normal Values for Children

AGE	HEART RATE	RESPIRATION	SYSTOLIC BP
New-born	100 – 160	30 – 60	50 - 70
1–6 weeks	100 – 160	30 – 60	70 - 95
6 months	90 – 120	25 – 40	80 - 100
1 year	90 – 120	20 – 30	80 - 100
3 years	80 – 120	20 – 30	80 – 110
6 years	70 – 100	18 – 25	80 - 110
10 years	60 – 90	15 – 20	90 - 120

Paediatric Guidelines

The care for young people is a speciality in itself. Some general guidelines:

Trauma and respiratory troubles are the most likely reasons for pre-hospital care. Anatomical differences (e.g. larger relative head size, less musculature) from adults make young children more prone to certain injuries.

Observe carefully a child's overall appearance and activity level before doing a hands-on assessment.

A calm and confident manner should help put the parent or guardian at ease. Involve the parent in the care such as by having them hold the child.

For infants start assessment at least threatening area and finish at the head.

Toddlers may tend to resist your efforts. Speak soothingly and try to distract with a favourite toy or otherwise engage their interest.

For pre-schoolers explain procedures in simple terms. Allow them to see and possibly hold some of the equipment to gain trust.

School age children are more likely to understand and co-operate but may still regress emotionally. Treat them with respect and make them partners in the care.

APPENDIX III - GLASCOW COMA SCALE

Measures three different functions of the nervous system to determine current neurological status and monitor any progressive changes. A score of 13 or less indicates the need for rapid transport.

GLASCO COMA SCALE – RESPONSE	SCORE
Eye Opening Response	
Spontaneously open, blinking	**4**
To verbal stimuli or speech	**3**
To painful stimuli	**2**
No response	**1**
Best Verbal Response	
Oriented	**5**
Confused, but able to answer questions	**4**
Inappropriate words	**3**
Incomprehensible sounds	**2**
No Response	**1**
Best Motor Response	
Obeys commands for movement	**6**
Localizes pain, purposeful movement	**5**
Withdraws in response to pain	**4**
Abnormal flexion (decorticate posturing)	**3**
Abnormal extension (decerebrate posturing)	**2**
No response	**1**
Total Score (out of 15) **Record on PCR as (eg. E4/V5/M6=15 or E2/V3/M4=9, ect.)**	

Note that a motor response in any limb is acceptable.[2] The scale is composed of three tests: eye, verbal and motor responses. The three values separately as well as their sum are considered. The lowest possible GCS (the sum) is 3 (unresponsive), while the highest is 15 (fully awake person)

APPENDIX IV – MEDICAL COMMUNICATIONS

Calls to EPOS Physicians can happen through JRCC. Communication of information may take place via radio or phone, by Patient Care Record, or person to person at patient handover. Notification regarding patient status will normally be passed through MCTS or JRCC.

Advice vs. Orders

Medical ADVICE may be provided by any trained person such as a nurse (or nurse line), paramedic or SAR Tech. Only a physician can give Medical Orders (Delayed Protocol).

If medical consult (advise or orders) is required during a SAR incident, or if a medical evacuation may be required, ensure that JRCC is advised as they may be able to assist with arranging this service.

Consider also local medical care facilities ashore. If likely receiving hospital is known, this may be an option. As above, keep JRCC advised in case of need to medevac.

Radio or Phone Notification Format

Be clear, concise & brief, yet descriptive enough to paint picture for receiving physician.

Identify Self:

Name and level of qualification
Set the Scene
Vessel and location (e.g. CG ship ____, 3 hours off shore)

Identify Patient and Chief Complaint:

Patient's age and sex
Tell the Patient's Story
Nature of illness/injury - Description of chief complaint
Relevant Medical History and Summary of vital signs

Summary of Care and Patient Reaction:

Any critical interventions performed - Protocols or treatments carried out
Patient's response to treatment - Summary of patient status, including trend

Conclusion

Destination and estimated time of arrival (ETA)
Request for medical advice or orders[41] if applicable
Discuss medical evacuation options

[41] **Advice or Orders**: best to have a witness at hand when receiving orders; write down and read order back to physician to ensure accuracy; note time, physician's name and license number or facility
Note: Have information such as completed PCR with vital signs and detailed history at hand. If medications may be ordered from Ship's Pharmacy have copy of CGFLS 400.00.07 ready for reference

APPENDIX V – PHARMACEUTICALS / ASSISTED MEDICATIONS

CG Fleet Logistics Standard CGFLS 400.00.07 describes the **Pharmaceuticals, Medical Supplies and Related Items** on CG ships, and the rules for procurement, custody, control and disposal of same. **Fleet Safety Manual (8.B.3) also refers.**

Meds in 400.00.07 with RS Code Z are Prescription or Controlled and require a medical order prior to use. If in doubt as to use of over the counter meds seek medical advice. **Conduct medical assessment prior to seeking advice or orders.**

- Medications – General Safety Precautions
- Wash your hands before and after use
- Visually inspect medication prior to use (does it look right).
- Avoid the indiscriminate use of over the counter drugs
- Always read and follow directions (read label 2x). Never share prescription drugs.
- If adverse reaction, discontinue and contact physician
- Store drugs securely and as directed. Do not use if out of date.
- Beware the unintended side effects of combining drugs.
- Use available resources, such as CPS (Compendium of Pharmaceuticals and Specialties) and Merck Manual

The Six Rights

Safe and appropriate use is in part provided by ensuring that the five rights are followed:

1. The Right Medication – check, then recheck the label
2. The Right Person – only for the person prescribed
3. The Right Dose – never more nor less than directed
4. The Right Time – how often, before or after meals, etc.
5. The Right Route – follow instructions as to method
6. The Right Documentation – complete the paperwork

Assisted Medications[42]

It is not the role of the RS or first aid personnel to prescribe medications. It is however, appropriate in some cases to assist with certain meds to relieve acute symptoms of a previously diagnosed ailment. Read and follow directions on packaging and follow protocols. **Medications for which protocols exist for the RS to assist include:**

[42] **1. Epinephrine Auto-injector (Epipen) (anaphylaxis page 12) – assist with patient's**
2. Antihistamine (e.g. Benadryl or Triaminic) (allergic reaction page 12) – carried in jumpkit
3. Metered Dose Inhalers (MDI) e.g. Ventolin (short of breath page 15) – assist with patient's
4. Aspirin (ASA) (cardiac emergencies page 16) – carried in jumpkit
5. Nitroglycerin (cardiac emergencies page 16) – assist with patient's
6. Oral Glucose (diabetic emergencies page 21) – carried in jumpkit
7. Activated Charcoal (poisoning emergencies page 22) – carried in jumpkit

APPENDIX VI - OXYGEN THERAPY

SAFETY

Oxygen supports combustion – keep away from any open flame or sparks.
No grease or oil in presence of high-pressure oxygen.
Keep cylinder secured against falling at all times.
Oxygen is dry. For prolonged use **(over 1 hour) provide humidification** if possible.
Oxygen toxicity should not be a concern (requires prolonged use - over 24 hours).

Oxygen is indicated in cases of hypoxia, suspected hypoxia, medical or trauma patients, shock, SOB, dive injury, inhalation injury.
Oxygen cautioned if: Cardiac Pain, COPD patient, stroke patient.

- Hyperoxemia- **Oxygen should only be administered if PO2 is less than < 95% and/or the patient presents with obvious symptoms of shock (pale, cool, clammy skin) or SOB. Once patient has responded to oxygen therapy, then the LPM rate can be reduced or O2 stopped.**

Formula for Calculating oxygen duration

$$\frac{\text{Gauge Pressure X cylinder constant}}{\text{Flow rate in LPM}} = \text{Duration in minutes}$$

Cylinder Size	Cylinder Constant	Volume
D cylinder	0.19	350 litres
Jumbo D	0.30	646 lt.
E cylinder	0.34	680 lt.
M cylinder	1.56	3000 lt.
K cylinder	3.15	6900 lt.

Example - "Jumbo D" cylinder at 2000 psi at a 15 LPM flow rate should last 40 minutes.

Oxygen flow rate & percentages

Oxygen device	Flow rate	Oxygen %
Nasal Cannula	1-6 LPM	25 - 40%
Simple face mask (pediatric-adult)	6-12 LPM	40 - 50%
Non-rebreather mask	10-15 LPM	up to 90%
Bag-valve-mask	10-15 LPM	60 %
with reservoir	10-15 LPM	up to100%

Filling & Hydrostatic Testing – Oxygen cylinders no longer come with an expiry date. Oxygen supplier will conduct hydrostatic test of cylinder on an as required basis prior to filling (cylinder cannot be filled if 5 years past last stamped hydro date on cylinder).

APPENDIX VII – DIVE INJURY - RAPID FIELD NEURO EXAM

Divers Name _____ Examiner _____

Date _____ Initial Complaint _____

Time								
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Mental Status: Does he Know: 1. Name?								
2. Where he is?								
3. Time of Day?								
4. Most recent activity?								
5. Is speech clear, appropriate?								
Sight: Eye Movements: 1. Correctly counts fingers?								
2. Vision Clear?								
3. Move all four directions?								
4. Nystagmus (involuntary movement of the eyeball) absent?								
Facial Movements: 1. Teeth clench okay?								
2. Able to wrinkle forehead?								
3. Tongue moves all directions?								
4. Smile symmetrical?								
Head / Shoulder Movements: 1. Swallow. Does “Adams apple” move?								
2. Shoulder shrug normal, equal?								
3. Heads movements normal, equal?								
Hearing: (use finger rub close to ears) 1. Normal for that diver?								
2. Equal for both ears?								
Sensations (to light touch): Present, normal and equal both sides across: 1. Face								
2. Chest								
3. Abdomen								
4. Arms								
5. Hands								
6. Legs								
7. Feet								
8. Back								
9. Buttocks								
Muscle Tone: Present, normal and equal both sides for: 1. Arms (can he bend, lift, push)								
2. Hand grips (squeeze two fingers)								
3. legs (raise, bend, push)								
4. Feet (pull against and push)								
Balance and Coordination: 1. Romberg (upright, eyes closed, feet together, arms outstretched) OK?								
2. If supine: Heel-shin slide (knee to ankle) OK?								
3. Alternating hand movements (his finger to nose then your finger) OK?								

APPENDIX IX - ENTONOX PROTOCOL

Entonox[43] - analgesic gas; mixture of 50% Nitrous Oxide, 50% Oxygen (N2O O2).
Safety – Safety as for oxygen cylinders. Store and use horizontal to prevent separation.

Indications for Use

- **To ease pain**. **Primarily indicated for traumatic injuries** to the extremities.
- **Used only after completion of assessments to rule out contraindications**.

Contraindications for Use

- **Inability to ventilate an enclosed treatment area** (e.g. air transportation).
- **Inability to comply with instructions** (e.g. decreased LOC).
- **Suspected inhalation injury.**
- **Acute pulmonary edema or chest injury / pneumothorax (auscultate chest).**
- **History suggesting decompression sickness or air/gas embolism.**
- **Patient has taken Nitroglycerin within last 5 minutes.**
- **Obvious shock, patient requires 100% oxygen or is cyanotic or short of breath.**
- **Caution: Head injury, earache or maxillofacial injuries.**
- **Caution: COPD patients** (e.g. emphysema, chronic bronchitis).
- **Caution: Abdominal trauma or abdominal distension / obstruction.**
- **Caution: Depressant drugs or alcohol intoxication.**

Before assisting with Entonox you must:

1. **Complete primary survey.**
2. **Obtain history (SAMPLE) and investigate pain complaint (OPQRST).**
3. **Obtain a baseline set of vital signs.**
4. **Physical exam sufficient to rule out contraindications (auscultate).**

- **Explain the intended effects** (pain relief) and that he/she will self-administer.
- **Invert the bottle three times** (minimum) to ensure gases are mixed.
- Open valve, then check and note the tank pressures and times (for start and stop).
- Patient to breathe deeply at normal rate. May take a few minutes. Relief may only be partial. **Note reaction and monitor for complications.** Replace with oxygen if patient shows complications. Complete **documentation and give notification**.

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[43] **Entonox – Desirable effects**: reasonable degree of pain control; rapid onset and effects dissipate rapidly; compatible with other drugs; not toxic within time frame of field use
Possible side effects: nausea, drowsiness, dizziness or giddiness

Storage: C**annot be stored and used below -6 C** as the two component gases will separate, resulting in potential delivery of asphyxiant. If exposed to cold, take out of service and warm for 36 hours.

APPENDIX X - Sager Traction Splint/ Splinting Materials

Sager Splint - Indicated for mid shaft femur fractures only. Apply to stable patient after assessments or to unstable patient once transport underway. **Objective is to stabilise the injury and provide patient relief.**

Traction Protocol

- **Maximum of 15 lbs (or 10% body weight) of traction for closed femur fractures**.
- **Maximum of 5 pounds for an open fracture.**
- **Maximum 5 pounds for a fracture near the knee joint** – and only then if absent pulse below, over 30 minutes to aid and marked tension at injury site.
- For bilateral fractures use a maximum of 15 pounds traction to stabilise limbs.
- **No traction applied if more than one break on a single limb**.
- Do not release traction once it has been applied.

Application

- **Steady and support extremity. Check and compare** the distal nerve and circulatory status of each limb (before and after splint application).
- **Straighten a severely angulated fracture**, if required, prior to splint.
- **Position the splint and place ample padding**.
- **Secure thigh strap and ankle harness** (fold back pads as required for snug fit)
- **Firmly hold the bar, and apply traction**.
- **Secure splint to injured leg** with broad ties.
- Place blanket, bring uninjured leg in and secure together.
- Tie figure 8 around feet.

Joint Injuries Immobilized in Position Found Unless:

- no distal pulse
- and, over 30 minutes to medical aid
- and, marked tension at injury site.

Other Splinting Materials

Splinting materials include: air splints; padded wooden splints; spine or fracture board; blanket/pillow splint; SAM splint; Speed splint; patients body; improvised materials.

APPENDIX XI – Extrication and Transfer Between Vessels

For all these operations safety must be first. Mistakes can be catastrophic.

Extrications – General Safety Rules

- Conduct a risk vs. benefit analysis for all these operations.
- Plan your entry and exit. Step back and look at the big picture – there may be a simpler solution. If any doubt consider a dry run with stretcher.
- Consider hazards and what could go wrong. Ensure it is prevented.
- Select stretcher combination that provides best protection for casualty.
- Ensure that all persons involved understand their role.
- Assign a spotter to call out and remove hazards and provide back-up.
- Attach and tend a safety line for lifting and lowering.
- Move in stages as appropriate to allow rest and to reassess.

Use of Rope or Lifting Gear for Rescue – General Safety Rules

- Rescuers in appropriate safety gear and are tied into suitable anchor if fall possible.
- Check gear visually and by feel prior to use. If in doubt – replace.
- Select the strongest possible anchor for lifting gear (e.g. structural to vessel).
- Back up any questionable points or higher risk lifts or lowers, as with use of a separate belay capable of arresting fall – ideally with separate anchor and operator.
- Edge protection on sharp edges or abrasion areas. No knifes around loaded lines.
- Avoid software on software – nylon on nylon under load creates intense heat.
- Stay out of the bite of lines. Do not stand inside loaded tensioned areas.
- Communications should be made clear before start of operation.
- If you see a problem, stop the operation until it is rectified.

Use of Cranes for Personnel Lifting and Lowering (Fleet Bulletin 2-2003 refers)

- Some cranes are specifically placarded with a prohibition against use for personnel lowering or lifting, and when such a placard is fitted it should be respected.
- In general consider whether a better, safer option is possible and if not take additional redundant safety to reduce risk or consequence of failure.

Transfer between Vessels

- If possible arrange for transfer at compatible deck heights to minimize risk.
- Floatation for casualty (e.g. PFD, floating blanket, floatation collar on stretcher) and all involved personnel. Safety line attached if any risk of slip or fall.
- Insulate patient and consider supplemental heat packs.

APPENDIX XII – HANDLING THE DECEASED – BODY RECOVERY

Coroner's Office

The Coroner's office is responsible for the deceased. This includes taking charge of the body, positive identification and forensic pathology. Investigations are typically conducted with police. While the Coroner's jurisdiction begins at the scene of death, interests must be secondary to the rescue of survivors from scene.

The Body Recovery Tasking

If a Coast Guard unit is tasked with the recovery of a body and the tasking agency (Police or Coroner) is present then the Coast Guard role is to assist under their direction.

If tasked to recover without the assistance or presence of the tasking agency, be sure to clarify how they would like you to handle the body and evidence.

If body found outside specific tasking the first action should be to notify the police or coroner and follow direction. They may ask that you stand by until they are able to attend. If the body is at risk of being lost (due to current, tide, etc.) they may ask that you do a recovery.

Body Substance Isolation

Practise standard body substance isolation (BSI) procedures, by wearing gloves, goggles, mask, disposable gown as appropriate and hand washing afterwards.

Equipment should be sanitized with soap and water and disinfected (water and bleach at 10:1) as appropriate. BSI items can be bagged and sent with the body for disposal.

The Body Bag

To place body in bag, lay bag alongside and role to place body face up in bag, with head at top of bag so when zipper is opened face is seen first. Liner bag can be placed inside heavier mortuary pouch for transport. If bagging in water it is good practise to cut small holes in corner of liner to allow drainage – but monitor for escaping evidence.

Documentation

As noted above, follow the direction of the responsible authority. If you are the eyes of the coroner at the scene make note of findings, including position, anything unusual on the body or at the scene, or anything that happens to the body during recovery.

- Using CG camera to take digital photos or video of the body prior to recovery could be useful to investigators. These must be protected and should be placed in the custody of the CO or OIC until handed over to the investigating authority.
- Patient Care Record can be used to document observations, and would also be handed over.

APPENDIX XIII - CRITICAL INCIDENT STRESS PROGRAM

Critical Incident

- Any event which creates unusually strong emotions in an individual which may interfere with a person's ability to function during or after the incident.

Critical Incident Stress (CIS)

- The reaction of normal people experiencing normal responses to abnormal events.
- Response may be immediate or delayed.
- May be cumulative from a series of events.
- May be experienced physically or psychologically.

CIS Signals

Each person will react differently. Some common reactions include:

- digestive disorders
- sweating and tremors
- sleep disruption and flashbacks
- confusion, disorientation and poor concentration
- anxiety, withdrawal, and depression
- sense of loss, grief, or helplessness
- anger and resentment

CIS Peer Team Member

- An employee or spouse trained to provide information, assistance and support following a critical incident. Trained to provide "defusing".
- **JRCC or Regional Operations Centre can activate peer team if requested.**

Mental Health Professional

- Can be contacted through supervisor or Peer Team Member. Provides CIS debriefing and further counselling as required.

Confidentiality is assured in all stages of CIS Program.

Employee Assistance Program (Health Canada)

- toll free 1-800-268-7708

APPENDIX XIV - ACCIDENTAL EXPOSURE TO BLOOD OR BODY FLUIDS

Assumptions

- All blood or body fluids are considered to be potentially infectious.
- Notwithstanding the previous statement, it must be understood that the chances of contracting an infectious disease, particularly HIV, during the provision of first aid is extremely small.
- At highest risk are needle stick injuries, bites and blood splashes on open wounds or mucous membranes.

Prevention

- Body Substance Isolation (BSI) procedures, including; hand-washing, exam gloves and goggles.
- Use of disposable equipment, clean and disinfect other gear (see next page), use sharps containers, etc.

Post Exposure

- Provide first aid.
- PUNCTURE INJURY: allow to bleed freely, avoid squeezing, wash with soap and water, wipe area with alcohol, and dress as for open wound.
- MUCOUS MEMBRANES or EYES: rinse thoroughly with water or normal saline.
- OPEN WOUNDS: wash well with soap or water.
- Identify the source: document details of the accident (type of fluid, type of injury, risk factors, etc.). Maintain confidentiality.
- Immediate notification to supervisor and first aid attendant, with pertinent details.
- If indicated access anti-retroviral therapy through local hospital emergency ward. (Do not delay in seeking treatment as most likely to be effective if started within 2 hours).
- Clarify with medical professionals and advise supervisor of need for any continued therapies, etc.
- Ensure appropriate documentation is completed and forwarded.

APPENDIX XV – INFECTION CONTROL – Cleaning of Equipment

The use of disposable equipment will help in preventing the spread of infectious disease. Items which are not disposable require cleaning to remove potentially infectious agents.

Sanitizing – is the removal of gross contaminants and visible material using soap and water. Sanitizing is suitable for routine cleaning of equipment and is required prior to disinfecting items contaminated with blood or body fluids.

Disinfecting – required when non-disposable items are contaminated with blood or body fluids. Disinfect with hospital grade disinfectant (eg. T36) or a bleach solution (10 parts water and 1 part house hold bleach).
If mixing bleach this solution should be made up fresh.
Smaller items should be soaked in the solution for 10 – 15 minutes.
Larger items or areas should be should be sprayed or wiped down with solution.
If using bleach rinse with fresh water after disinfecting then dry prior to storage.
Wear appropriate PPE (gloves, goggles, etc.)

Sterilizing – kills all organisms with chemical means or with super-heated steam (autoclave) and would normally be done in a hospital setting.

Cleaning of Fluids from Floatation Garments

The manufacturers of floatation garments advise that bleach will degrade the fabrics and should not be used. The BC Centre for Disease Control confirmed that a hot soapy wash is sufficient for cleaning of garments and fabrics and is what is commonly used in hospitals.

Consider that in order to machine-wash buoyant items such as floater coats or coveralls, the use of a front loading machine is recommended to ensure the garment is immersed in the soapy wash. This would be indicated for badly soiled materials. For immediate cleaning of small areas (e.g. kneeled in blood or vomit) use a hot soapy scrub with a stiff brush (& rubber gloves).

If laundering soiled garments (clothing, etc.), wash these separately from other laundry and if the garments allow, use some bleach in wash. If concerned for contamination of machine (unlikely) piece of mind can be aided by running an empty cycle with hot water and bleach.

APPENDIX XVI - PHONE NUMBERS

JRCC:
- 1-800-567-5111
- (250) 413-8934

Victoria Base, Switchboard: 250-480-2600, fax 250-480-2702

CG Operations Centre: 250-413-2800, fax 250-413-2810

Rescue Specialist Co-ordinator, Victoria:
- 250-480-2635
- email shane.norhaug@dfo-mpo.gc.ca

Poison Control Centre: (24 hours): 604-682-5050 / 1 800 567-8911

CANUTEC – Dangerous Goods Emergency: (24 hours) 1-613-996-6666

Vancouver General Hospital Hyperbaric Chamber:
- direct to chamber 604-875-4033
- 24 hours VG Hospital 604-875-5000

DFO Shellfish Area Closures:
- 1-866-431-3474 (24hrs recorded)

Cardiac Science – Technical Support (24 hours): 1-888-466-8686

Product Distribution Centre: 604-660-0500

BC Nurse Health Line - General Health Info (RN staff 24 hours): 1-866-215-4700

Health Canada Victoria - Workplace Health and Public Safety: 250-363-3566/3275

APPENDIX XVII - RESCUE SPECIALIST EQUIPMENT

All Rescue Specialists shall have unrestricted access to a Jumpkit containing, at least the following items: Taken from Fleet Order 207 B.2

No.	*Quantity*	*Item*
1	1	Oropharyngeal airways (set of 7 different sizes)
2	2	Elastic bandages, (7.5 cm or greater x 5 m)
3	10	Triangular bandages, triangular
4	12	Band-Aids
5	1	Blood pressure cuff
6	1	Adjustable/universal cervical collar OR set of 4 (different sizes)
7	2	Abdominal Dressings (6 inch or larger)
8	4	Pressure dressings(6 inch or larger)
9	1	Forceps-splinter
10	20	Sterile gauze individually wrapped (7.5 x 7.5 cm or larger)
11	10	Examination gloves (pairs – non latex powdered nitrile preferred)
12	2	Safety goggles
13	4	Kling gauze rolls (7.5 cm or larger x 4.5 m)
14	5	Disposable masks, NIOSH N 95 particles
15	1	Pocket mask, with oxygen inlet, one-way valve and head strap[44]
16	1	Notepad (waterproof)
17	1	Penlight
18	2	Pencils (sharpened)
19	500 ml	Sterile saline or water solution
20	1	Heavy duty scissors
21	2	Full-body sterile burn sheet
22	2	Formable splints
23	1	Stethoscope
24	1	Manual suction unit
25	20	Alcohol swabs
26	2	Medical tape (2.4 cm or larger x 4.6 m)
27	1	Hypothermic termometer capable of reading as low as 28°C,
28	1	One Bag-Valve-Mask ventilating mask – paediatric size with oxygen reservoir bag
29	1	One Bag-Valve-Mask ventilating mask – adult size with oxygen reservoir bag
30	2	Velcro elastic ties (set)
31	1	Ring cutter
32	2	Cold packs
33	2	Glucose gel
34	5	Patient care records

[44] All airway equipment must be made of clear / transparent plastic.