Cancer Care Nova Scotia

Guidelines for the Management of

Oncologic Emergencies in Adult Cancer Patients

Quick Reference Version

NOVA SCOTIA

Acknowledgements

The majority of this practice guideline has been adopted, with permission, from *Oncologic Emergencies, A Guide for Family Physicians*, Guideline Utilization Resource Unit, Alberta Health Services, 2010.[1]

Cancer Care Nova Scotia (CCNS) expresses appreciation to the members of the Oncologic Emergencies Working Groups who refined and/or developed sections of the guidelines:

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Review

This guideline will be reviewed in three years from publication date or earlier if important new evidence becomes available.

Table of Contents

Preamble

These guidelines focus on the management of adult patients with a suspected oncologic emergency who present to EHS Paramedics or Emergency Departments.

- Adult patients who present with a suspected oncologic emergency within the Cape Breton Cancer Centre (CBCC) or the QEII Cancer Program (QEII) could be initially managed within the unit/clinic, following these guidelines, and transferred, as clinically indicated.

- Inpatients, in facilities other than the CBCC or QEII, who experience a suspected oncologic emergency can, if clinically appropriate, be initially managed on the unit, following these guidelines, and should be transferred to the ICU, Regional Hospital, CBCC or QEII, as required.

- Adult patients who present with a suspected oncologic emergency in any other setting should be immediately transported to an Emergency Department (ED) to be managed according to these guidelines. It is strongly recommended that practitioners call the Emergency Department to advise them that a patient with a suspected oncologic emergency (specify the nature of the emergency) is being transported to their facility.

- Some community EDs may elect to transport patients to a regional or tertiary ED for more advanced emergency care.

For information concerning the management of pediatric oncologic emergencies, please refer to APPHON/ROHPPA *Emergency Room Supportive Care Guidelines* binder or visit *www.apphon-rohppa.com*.

While cancer patients are at increased risk for bowel obstruction, pericardial tamponade and venous thromboembolism (VTE), these situations are not unique to the cancer patient population. Therefore, they are not included in this guideline. Clinicians encountering these emergency situations should manage them according to established practice guidelines, consulting Oncology as required.

Practice guidelines are intended to assist health care professionals with decisions throughout the spectrum of the cancer experience. This guideline is intended to assist health care professionals to care for adult cancer patients who experience oncologic emergencies. Management should be customized to meet the unique needs of individuals and their families. Guidelines should never replace specific decisions for individual patients, and do not substitute for the shared decisions between any patient and health professional which are unique to each circumstance. However, guidelines do provide evidence-based background information, consensus-based recommendations for similar situations, and a context for each individual decision.

These guidelines are designed for health professionals, working in a variety of settings. A Full Version of the guidelines is available on the *Cancer Care Nova Scotia (CCNS)* website, *www.cancercare.ns.ca.*

We recommend that patients, families and other non-health care professionals be referred to information regarding oncologic emergencies designed for the public, such as the Living Well With Cancer resources, available on the *CCNS* website, *www.cancercare.ns.ca*, the Canadian Cancer Society's Cancer Information Service, 1-888-939-3333, *www.cancer.ca* or the National Cancer Institute's Patient Version PDQ's®, *www.cancer.gov/cancertopics/pdq*.

For further information on this, or any other Oncology Practice Guideline, please contact *CCNS*, 1-866-599-2267 or *info@ccns.nshealth.ca*

Introduction [1, 2, 3, 4]

Cancer is a leading cause of morbidity and mortality in Canada. Nova Scotia has high cancer incidence and mortality rates amongst both males and females compared to the national rates. Given the complex nature of the disease and the cytotoxcity of treatment, cancer patients may experience a range of potentially life-threatening conditions that require urgent intervention.

In general, an oncologic emergency may be defined as any acute, potentially life-threatening incident, directly or indirectly related to a patient's cancer or its treatment. Oncologic emergencies may result in permanent morbidity or death. While some oncologic complications are subtle and may take weeks or even months to develop, others can manifest in a few hours, and quickly lead to severe negative outcomes, including paralysis, coma, and death. Prompt identification and intervention can prolong survival and improve quality of life.

Cancer patients are not immune from any medical emergency that may be experienced by an individual without a cancer diagnosis. Other non-neoplastic conditions must be considered in the differential diagnosis of every oncologic emergency.

Oncologic emergencies are not confined to the period of initial diagnosis and active treatment. They can occur at any time from pre-diagnosis to end-stage disease. In situations of recurrent malignancies, these emergencies can occur years after a cancer patient has been transferred from an oncologist to a primary care provider. Thus, it is critical for health professionals caring for cancer patients and survivors to be aware of a patient's cancer history and the related potential complications.

Once recognized, the aggressiveness of the management of any oncologic emergency should be influenced by the reversibility of the immediate event, the probability of long-term survival and cure, the ability to offer effective palliative treatment, the patient's/family's wishes/goals and/or advance directives.

Patients experiencing oncologic emergencies and their families will, undoubtedly, experience some degree of distress. Please refer to page 23, for information about addressing the psychosocial health needs of patients and families, and information regarding the support of and referral of those who are distressed and having difficulty coping.

Emergency Health Services Special Patient Designation

In order to streamline pre-hospital care and transport the patient to the most appropriate facility, Oncologists may elect to designate complex cancer patients at particularly high risk for experiencing an oncologic emergency as an Emergency Health Services (EHS) "Special Patient". The EHS Special Patient program enables the Oncologist to specify a tailored treatment and transport protocol for a high risk patient. The Special Patient protocol supersedes EHS' normal medical protocols. This program may be particularly helpful for patients residing in remote communities.

The EHS Special Patient application, to be completed by the Oncologist, can be accessed via the EHS website *www.gov.ns.ca/health/ehs/pmd/special-patient.asp*. Send completed applications to Emergency Health Services, Special Patient Program to 237 Brownlow Ave, Suite 160 Dartmouth, NS B3B 2C5, fax (902) 424-1781, or email *tanya.fraser@gov.ns.ca*.

The application will be reviewed by the EHS Provincial Medical Director. The EHS Provincial Medical Director may consult with the Oncologist, as necessary, to approve and finalize the Special Patient Protocol. A copy of the approved Special Patient card is sent to the Oncologist. In the case where an application is declined, the EHS Provincial Medical Director will send a letter of explanation to the Oncologist.

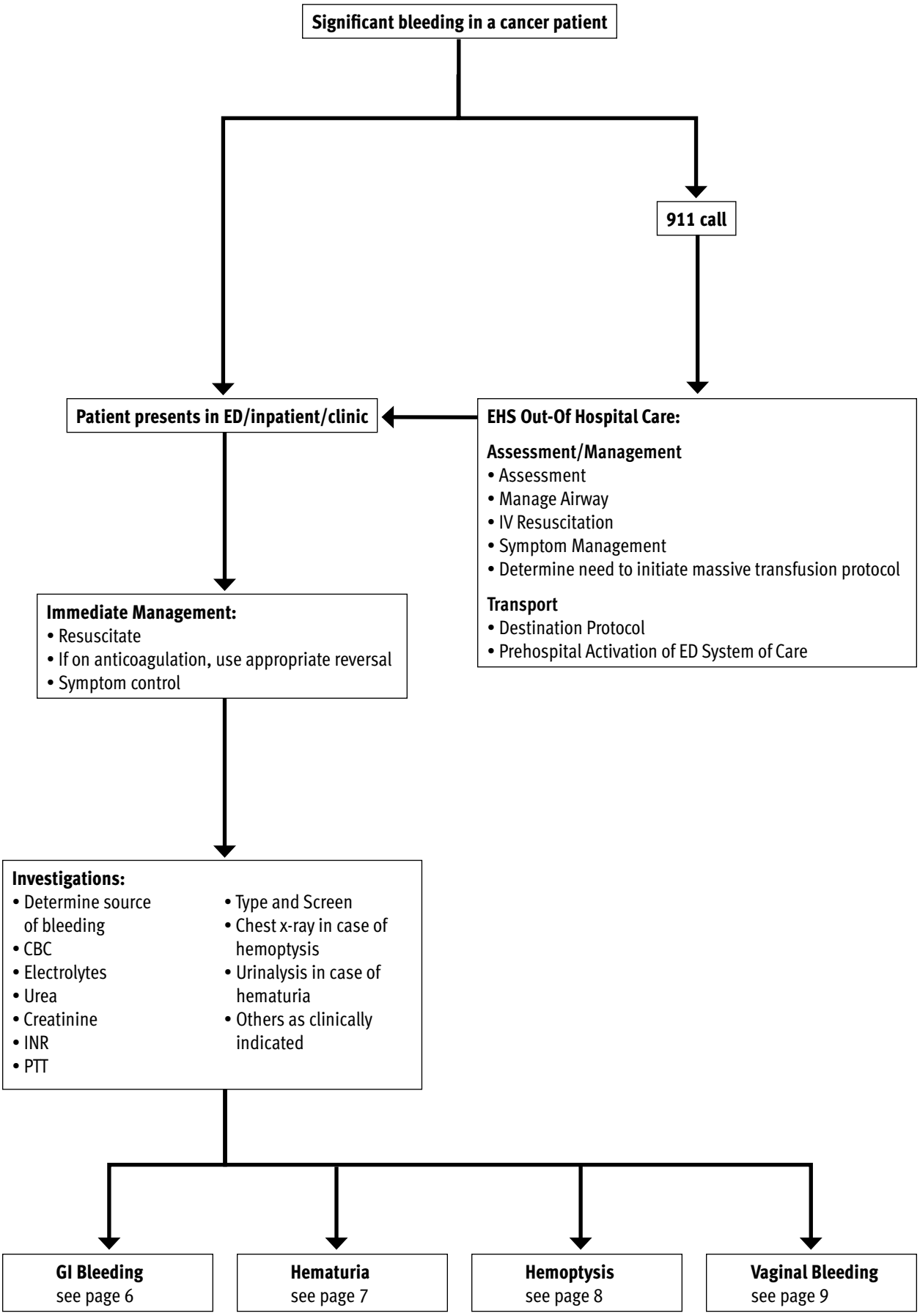
Once the Special Patient Protocol is approved, the EHS Communication Centre enters the information from the application into their communication system. This enables paramedics to access the patient's information electronically when en route to a call.

An EHS paramedic will hand deliver the Special Patient card to the patient's residence, confirm any information that may not have been given to them at the time of the application and review the program and card with the patient and/or next of kin. The patient and/or next of kin is advised to keep this card with them at all times.

Should the patient or next of kin call 911, EHS will follow the protocol on the Special Patient card, including contacting the receiving hospital, as soon as possible, to prepare for the patient's care.

Oncologists should reserve the designation of "Special Patient" for complex cancer patients at particularly high risk for experiencing an oncologic emergency.

Bleeding in a Cancer Patient [1, 2]



Gastrointestinal (GI) Bleeding (continued from page 5)

Management:
- Gastric or duodenal suspicious bleeds: Pantoprazole IV infusion (80mg bolus and 8mg/hr) should be initiated
- Esophageal variceal bleed: Octreotide IV infusion (50mcg bolus and 50mcg/hr) should be initiated
- Octaplex should be considered for patients on warfarin who meet the criteria.
  - Consultation with blood transfusion services is required.
  - Dosing is based on INR, if the INR is unknown or major bleeding is present, 80ml (2000 units) should be administered.

For definitive management refer to:
- General Surgery (lower GI bleeds)
- Gastroenterology (upper GI bleeds)

Follow specialist's management and transport advice

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status

Patients experiencing GI bleeding and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Hematuria (continued from page 5)

Assessment:
The type of bleeding can assist in determining the origin.
- Bright red bleeding, without clots, that partially clears during urination usually indicates a lower tract bleed
- Broader clots (which can be difficult to evacuate and may cause renal colic) also can indicate a lower tract bleed
- Long, veniform clots usually indicate an upper tract bleed

Hematuria with clot retention:
Urgent consult to local Urology or :
QEII (Halifax) 902-473-2220 CBRH (Sydney) 902-567-8000

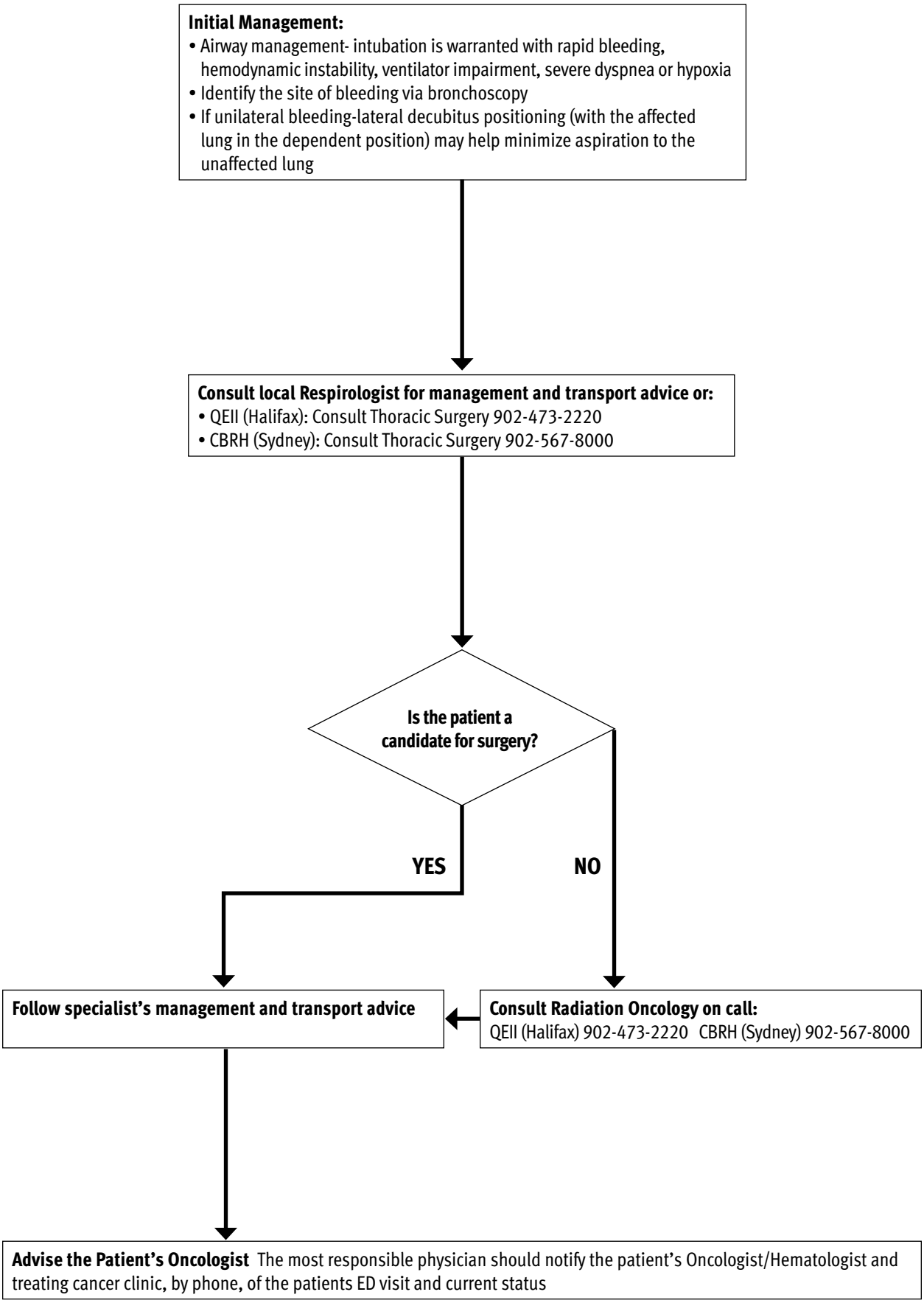
Gross Hematuria:
Elective consult to Urology

Follow specialist's management and transport advice

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status

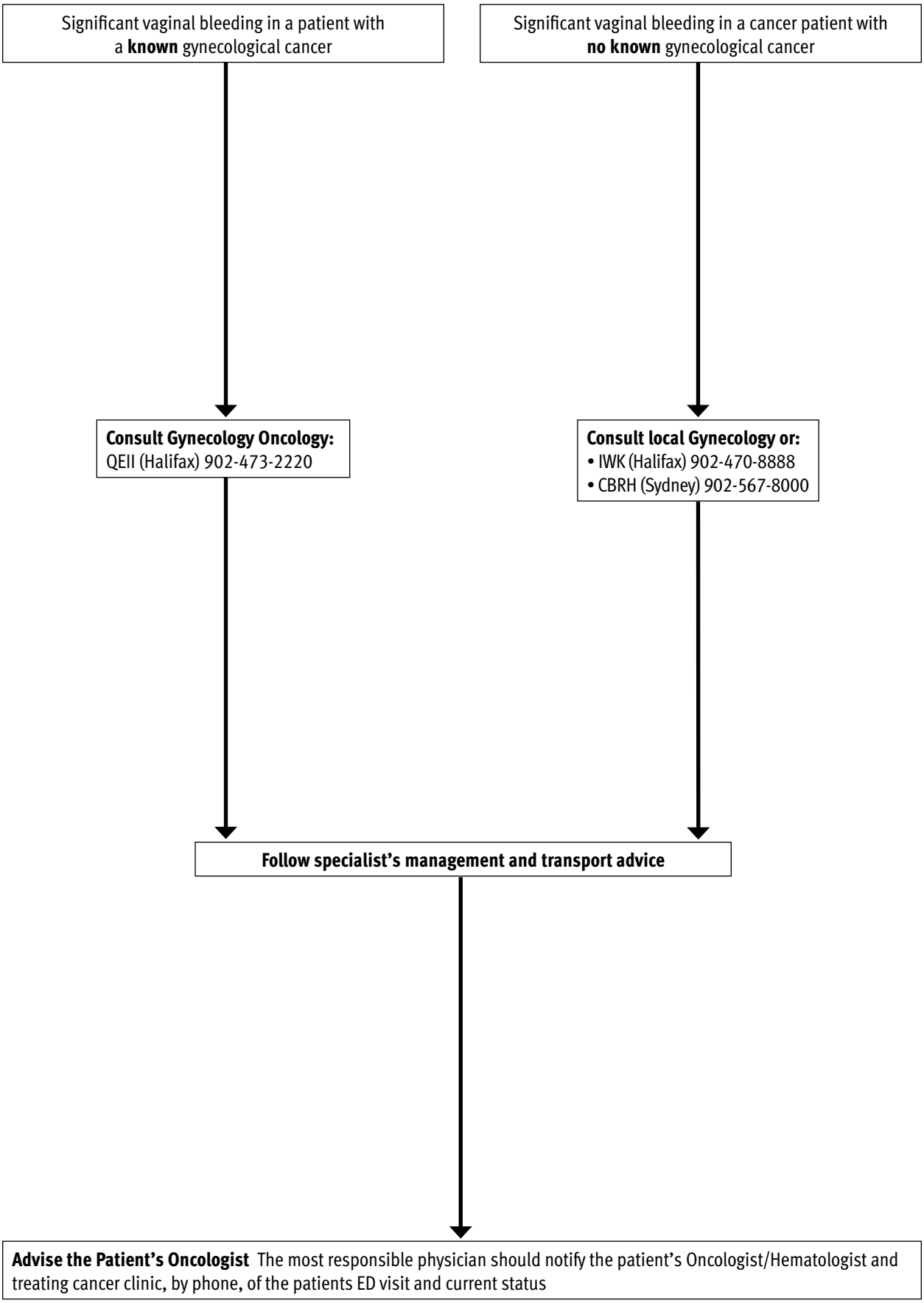
Patients experiencing hematuria and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Hemoptysis (continued from page 5)



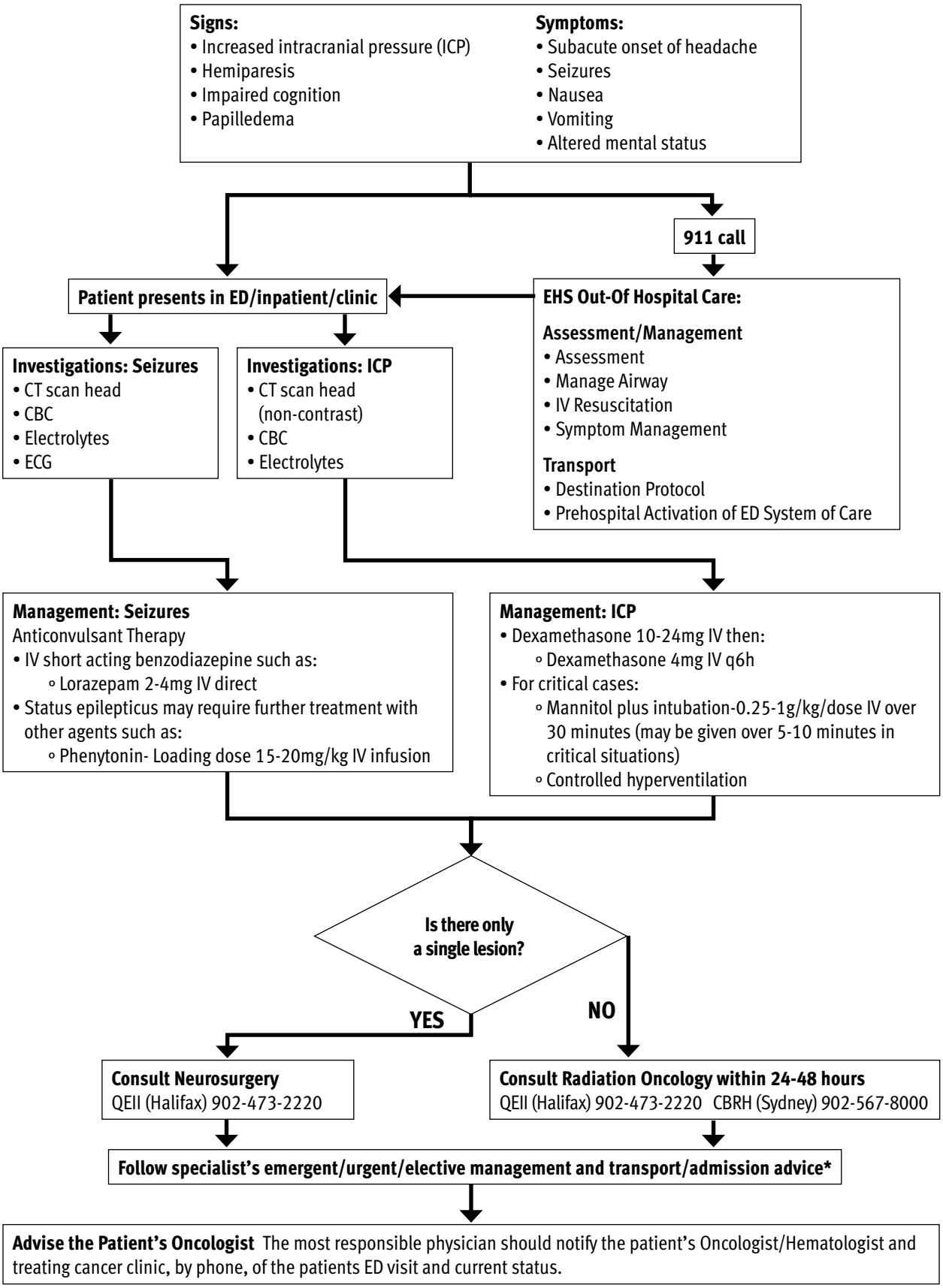
Patients experiencing hemoptysis and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Vaginal Bleeding (continued from page 5)



Patients experiencing vaginal bleeding and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Brain Tumour/Metastases, Increased Intracranial Pressure (ICP) & Seizures [1, 4, 10]



***Any hematologic patient presenting with brain metastasis, increased ICP or seizure activity, must be admitted or transported.**
***If a non-hematologic patient stabilizes after pharmacologic intervention, they may be discharged providing appropriate referrals have been made.**

Patients experiencing brain metastasis/ICP/Seizures and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Disseminated Intravascular Coagulation (DIC) [1, 2, 5, 6]

Signs:
- Petechiae
- Ecchymosis
- Purpura
- Pallor
- Bleeding from multiple sites (intracranial bleeding may cause restlessness, confusion, lethargy and altered mental status)
- Cardiovascular compromise
  - Tachycardia
  - Hypotension
- Abdominal distension
- Tachypnea

Symptoms:
- Decreased urine frequency or amount
- Dyspnea
- Hemoptysis
- Hematuria
- Oliguria

911 call

Patient presents in ED/inpatient/clinic

EHS Out-Of Hospital Care:

Assessment/Management
- Assessment
- Manage Airway
- IV Resuscitation
- Symptom Management
- Determine need to initiate massive transfusion protocol

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Investigations:
- CBC
- Peripheral smear
- INR, PTT, Thrombin Time (TT), PT
- Fibrinogen
- d-Dimer
- Others as clinically indicated to investigate the underlying cause

When DIC is strongly suspected, consult the Hematologist on call:
QEII (Halifax) 902-473-2220 CBRH (Sydney) 902-567-8000

Follow Hematologist's management and transport advice
- DIC will not improve until the underlying cause is treated
- Do not delay definitive treatment (even if invasive)
- Coagulation and vital organ function must be supported
- Anticipate the need for large transfusion of:
  - Platelets 4 units IV at a time (a reasonable target is 50-75 x 10^9/L)
  - Cryoprecipitate 10units IV at a time (aim to keep fibrinogen level > 1.5g/L)
  - Fresh frozen plasma 500-1000 mL IV
  - Clotting factors and/or packed red blood cells

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

Patients experiencing DIC and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Febrile Neutropenia[1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Febrile Neutropenia should be considered in any solid tumour, hematology or stem cell transplant (SCT) patient who has recently, or is currently, having chemotherapy and presents with a fever

911 call

Patient presents in ED/inpatient/clinic
- No need for isolation

EHS Out-Of Hospital Care:
Assessment/Management
- Assessment
- Airway management
- IV resuscitation
- Symptom management
- Determine the date of last chemotherapy

Transport
- Destination protocol
- Pre hospital activation of ED system of care

- ANC $<0.5x10^9$/L or an ANC expected to be $<0.5x10^9$/L over the next 48hrs
- Single oral temperature ≥38.3°C or temperature >38°C for more than 1 hour.

- CBC and differential **(CBC to be drawn within 10 minutes and sent as STAT)**

History:
- Diagnosis
- Date and type of last chemotherapy
- Prophylactic use of growth factors (GSCF)
- Prophylactic use of antimicrobials
- History of prior infection
- Presence of an indwelling catheter
- Past medical and surgical history,
- Current medications
- Allergies

Complete physical exam with focus on:
- Mental status
- Volume status
- Oral and pharyngeal mucosa
- Skin (including any indwelling IV sites)
- Respiratory system
- Abdomen
- Cardiovascular system
- A rectal exam should be avoided, but a peri-rectal inspection for abscesses should be done

1st dose of IV antibiotics within 60 minutes of triage

If patient has evidence of sepsis, initiate sepsis management protocols in ED

Once it is confirmed patient is neutropenic:
Investigation:
- Electrolytes, urea and creatinine
- Blood cultures: 2 sets (1 set = aerobic+anaerobic)
  - If patient has central line: 1 peripheral set and 1 central set
  - If patient does not have central line: 2 peripheral sets from different sites
- Urinalysis and urine culture
- Sputum gram stain and culture if productive cough
- Chest X-ray
- A lumbar puncture and cerebrospinal fluid analysis should not be routinely done
- Other investigations as clinically indicated

Febrile Neutropenia algorithm continued on following page

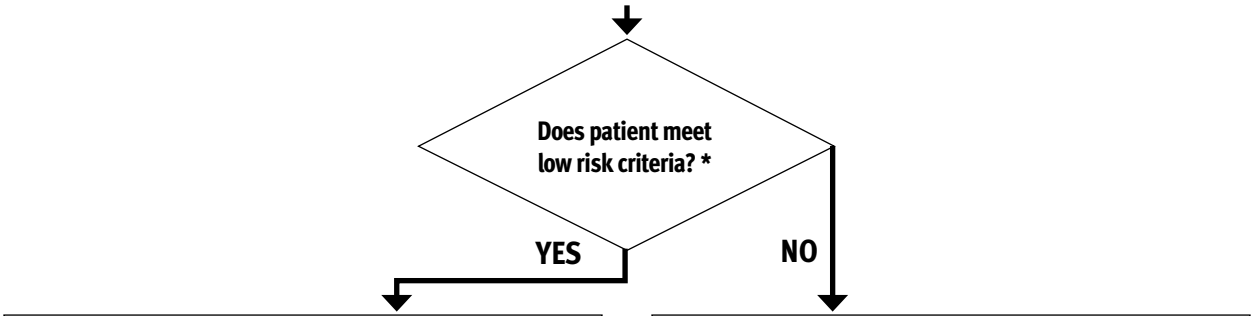
Does patient meet low risk criteria? *

YES

NO

Low Risk Management:
- Ciprofloxacin 750 mg orally, bid, adjusted for renal function

High Risk Management:
- Pipericillin-tazobactam 3.375 g IV every 6 hours



Low Risk Management:
- Ciprofloxacin 750 mg orally, bid, (adjusted for renal function)
  AND
- Amoxicillin/Clavulanate 875 mg orally, bid, (adjusted for renal function)

If serious allergy to penicillin then
- Ciprofloxacin 750 mg orally, bid, (adjusted for renal function)
  AND
- Clindamycin 600mg, orally, tid

Ciprofloxacin 750 mg requires Pharmacare Criteria for Coverage "Code 03" written on prescription.

The patient should receive their first oral dose of antibiotic within the ED and monitored for 4 hours to verify stability and tolerability of treatment.

Patient Education:
- Medication administration
- Signs and symptoms to watch for
- Reinforcing the need to have a family member/friend present 24 hours per day for the next 72 hours
- The importance of returning to the ED if they experience any new symptoms, or are unable to tolerate their antibiotics
- The need to be reassessed if the fever lasts longer than 3 days or their symptoms do not improve
- Reinforcing the importance of contacting their Oncologist/ Nurse to inform them of their febrile neutropenia diagnosis
- Appropriate use of acetaminophen

High Risk Management:
- Pipericillin-tazobactam 3.375 g IV q6h
  - If not available, Imipenem 500mg IV q6h

If serious allergy to penicillin then
- Ciprofloxacin 400 mg IV q12h
  AND
- Vancomycin 1 g IV q12h

If the patient is clinically unwell or the lab work is delayed, give the first dose of antibiotic before lab results are back.

Admission:
Once the ED has completed the assessment and administered the 1st dose of antibiotic, the patient will be admitted to the appropriate service. While a private room is preferred, it is not required. Reverse isolation is not recommended.

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/ Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

*** Low Risk Criteria**
Patients with acute leukemia or SCT are never considered low risk.
MASCC score** of ≥ 21 who also meet ALL of the following criteria:
- Patient is not currently on antibiotics
- Patient has no history of adherence issues
- Patient is able to return to the facility for follow-up
- Patient has no significant nausea or vomiting
- Patient is able to take oral medication
- Patient has prescription coverage
- Patient resides within 60 minutes of ED
- Patient has 24 hour live-in support
- Patient has telephone access

**** Multinational Association for Supportive Care in Cancer (MASCC) score:**

Variable	Score
Burden of illness	
No or mild symptoms	5
Moderate symptoms	3
Severe symptoms	0
No hypotension (systolic BP>90mmHg)	5
No chronic obstructive pulmonary disease	4
Solid tumor/lymphoma with no previous fungal infection	4
No dehydration	3
Outpatient status (at onset of fever)	3
Age <60 years	2

Points attributed to the variable 'burden of illness' are not cumulative. The maximum theoretical score is 26.

Patients experiencing febrile neutropenia and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Hyperviscosity Syndrome [1, 4, 21]

Presentation:
Hyperviscosity syndrome should be suspected in any patients with a known or suspected diagnosis of leukemia, Waldenstrom's Macroglobulinemia or myeloma who presents with neurologic signs and unexplained respiratory symptoms.

911 call

Patient presents in ED/inpatient/clinic

EHS Out-Of Hospital Care:

Assessment/Management
- Assessment
- Manage Airway
- IV Resuscitation
- Symptom Management

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Signs *(may be vague)*:
- Visual disturbances may include:
  - Retinal hemorrhage
  - Retinal vein thrombosis
  - Papilledema
- Fundoscopic exam, commonly reveals:
  - Dilation or engorgement of retinal veins, resembling "sausage links"
- Neurologic manifestations often include:
  - Ataxia
  - Encephalopathy
- Rare cases- congestive heart failure, stroke and coma may occur
- Hyponatremia
- Hypercalcemia

Symptoms:
- Hearing impairment
- Headache
- Dizziness
- Vertigo
- Diplopia
- Altered mental status
- Dyspnea
- Seizure

Investigations:
- CBC
- Electrolytes
- Peripheral smear
- Quantitative immunoglobulin (Ig) levels
- Total protein
- Imaging studies as clinically indicated to rule out alternate causes of these symptoms
  - CT head - if patient is experiencing neurological symptoms
  - Chest xray- if patient is experiencing respiratory symptoms

Initial Management:
- Initiate IV fluids

Once lab results are available, contact Hematology on-call immediately:
QEII (Halifax) 902-473-2220 CBRH (Sydney) 902-567-8000

Follow Hematologists management and transport advice
Which may include:
- Plasmapharesis
- Phlebotomy of 100mL-200mL of whole blood

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

Patients experiencing hyperviscosity and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Malignancy Associated Hypercalcemia (MAH) [1, 4, 22]

(MAH= corrected serum calcium >2.6 mmol/L)

Signs/Symptoms:

System	Early Manifestations	Late Manifestations
Neurological	• Weakness/fatigue • Memory/concentration difficulty	• Drowsiness • Confusion • Delirium→ Coma
Cardiovascular	• Shortened QTc interval • Enhancement of digitalis effects	• ST segment elevation • Hypotension • Bradyarrhythmias→ Heart block→ Cardiac arrest
Gastrointestinal	• Anorexia • Constipation	• Nausea • Vomiting
Genitourinary	• Polyuria • Nocturia	• Dehydration→ Oliguria

911 call

Patient presents in ED/inpatient/clinic

EHS Out-Of Hospital Care:

Assessment/Management
- Assessment
- Manage Airway
- IV Resuscitation
- Symptom Management

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Investigations:
- CBC
- Electrolytes
- Calcium
- Albumin
- Creatinine
- ECG
- Other as clinically indicated

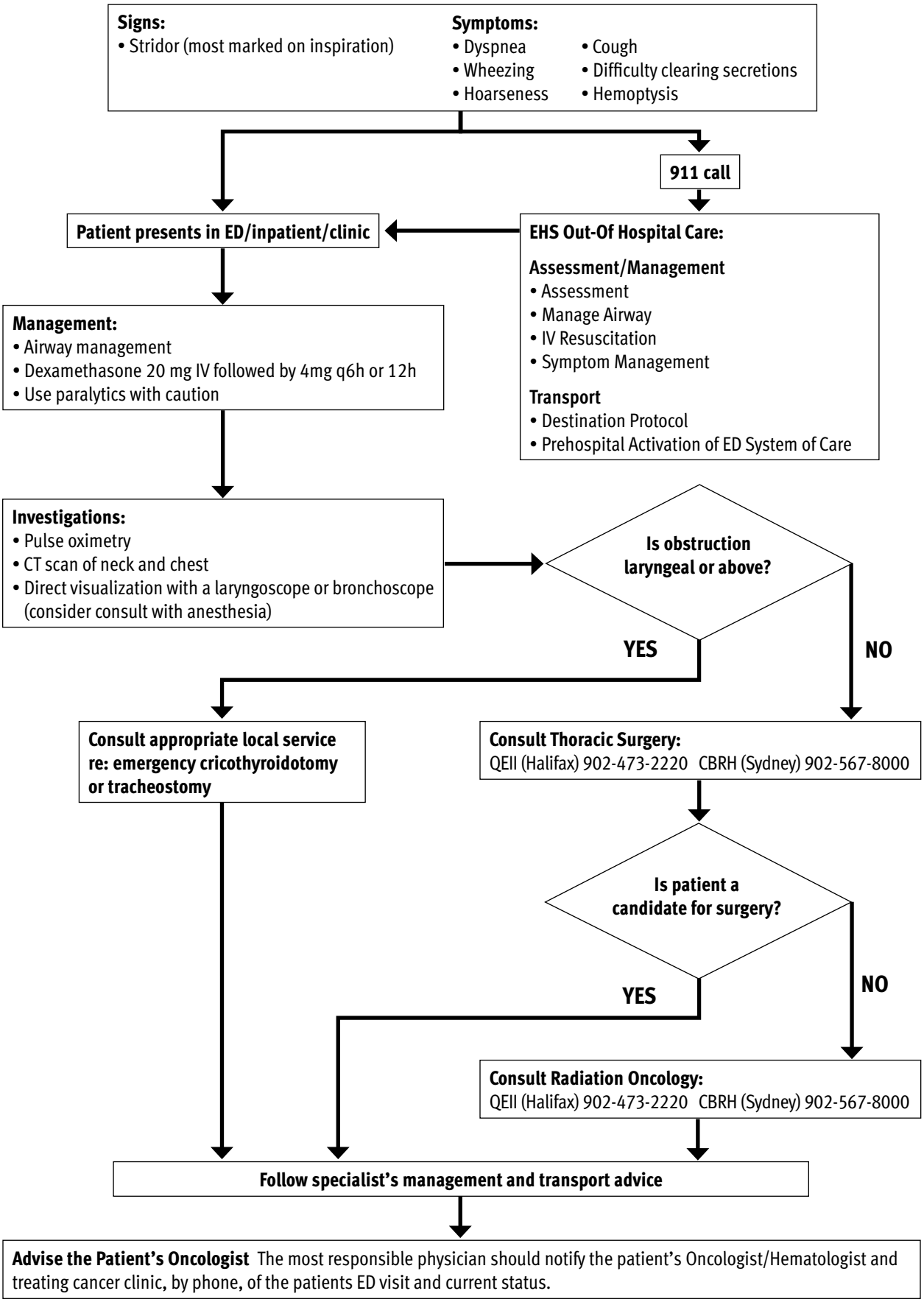
Management:
- IV normal saline is usually administered at 250-500mL/hr
- Zoledronic acid 4mg IV infusion
  - If unavailable Pamidronate 90 mg IV infusion
- Calcitonin 4 units/kg subcut or IM
- Sources of calcium supplementation should be discontinued if possible
- Sedatives, hypnotics and analgesics should be used with caution
- Dialysis should be considered in the presence of acute or chronic renal failure

These patients may be managed on a general medical unit

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

Patients experiencing malignance associated hypercalcemia and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Malignant Airway Obstruction [1, 2, 4, 23]



Patients experiencing malignant airway obstruction and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Malignant Epidural Spinal Cord Compression (SCC) [1, 4, 24, 25,26, 27, 28]

Presentation:
Any new onset back or neck pain in a patient with a history of cancer should increase suspicion of SCC

Signs:
- Motor weakness
- Sensory impairment
- Conus Medullaris Syndrome

Symptoms:
- Pain localized to the spine or with radicular pain (due to neural compression)
- Pain may worsen with movement, lying down, coughing, sneezing or straining
- Numbness, tingling, or pins and needles
- Limb heaviness or loss of balance
- Altered bowel and bladder function
- Perianal numbness may be present in cauda equine compression

Patient presents in ED/inpatient/clinic

911 call

As soon as SCC is suspected:
- Dexamethasone 10-20mg IV followed by 4-6 mg IV q4h

EHS Out-Of Hospital Care:

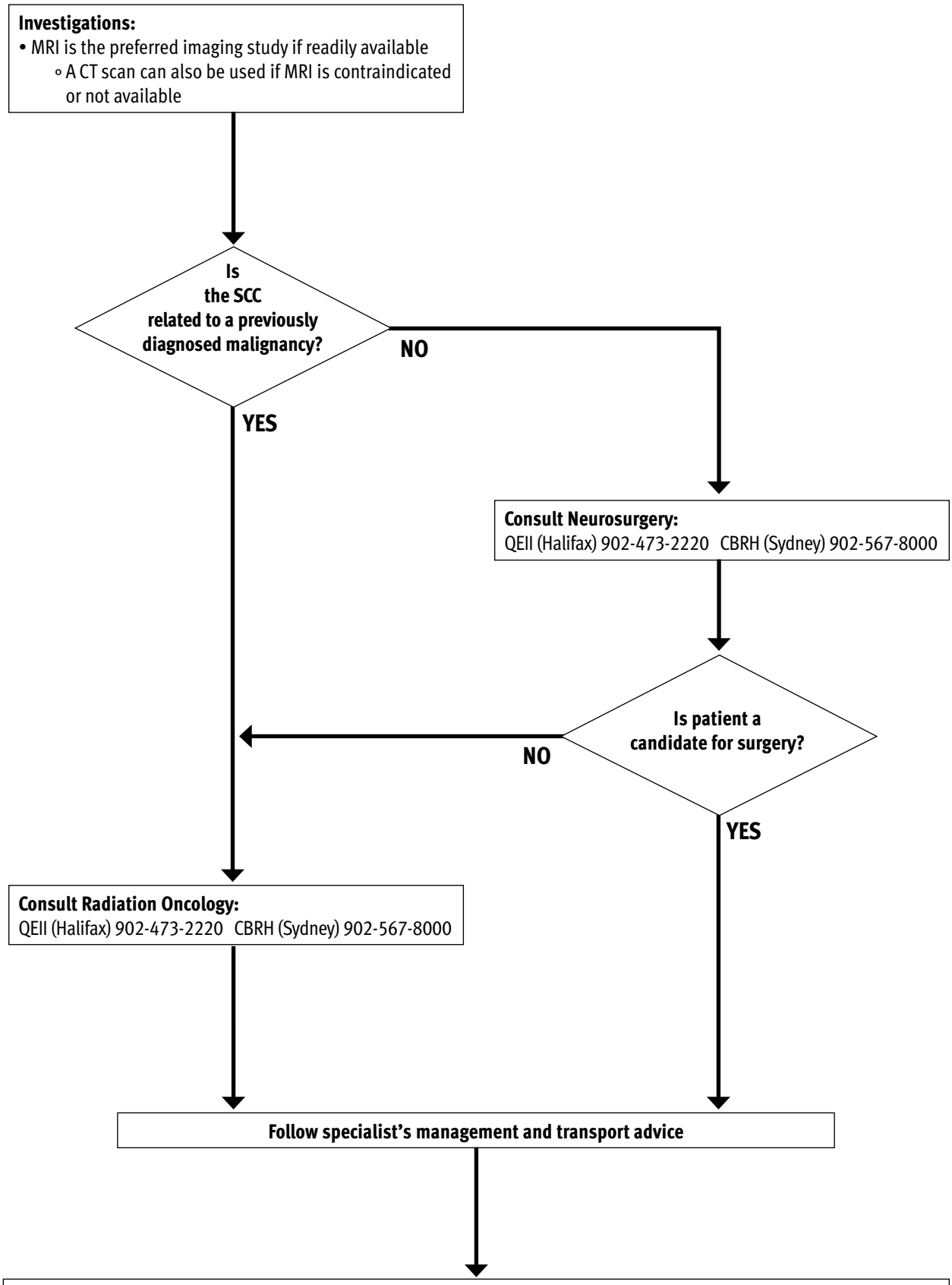
Assessment/Management
- Assessment
- Manage Airway
- IV Resuscitation
- Symptom Management

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Assessment:
- Medical History
- Physical exam and comprehensive neurological exam including:
  - Ability to ambulate
  - Pinprick exam
  - Reflexes
  - Rectal tone

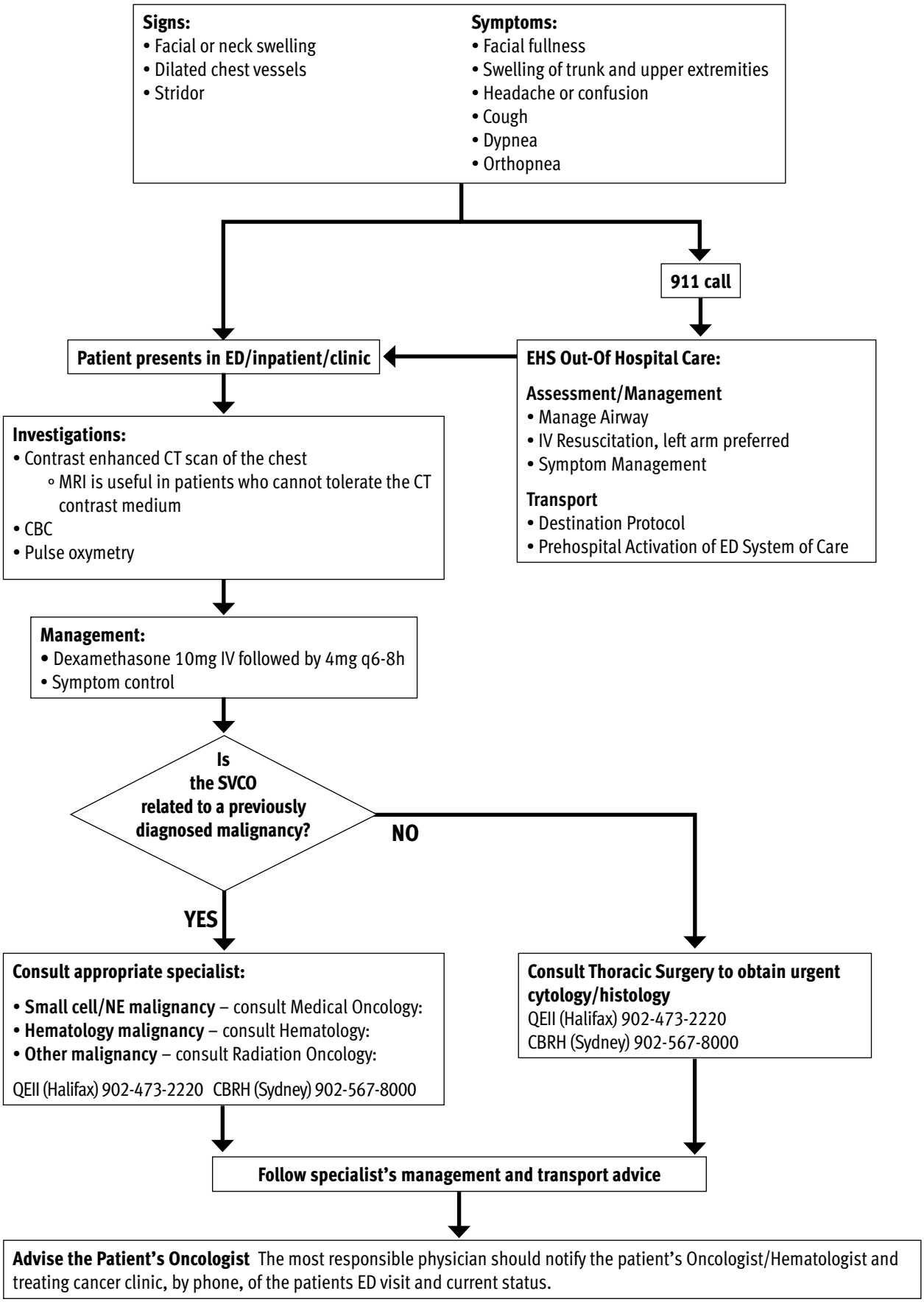
Malignant Epidural Spinal Cord Compression (SCC) algorithm continued on following page

Investigations:
- MRI is the preferred imaging study if readily available
  - A CT scan can also be used if MRI is contraindicated or not available



Patients experiencing malignant epidural spinal cord compression and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Superior Vena Cava Obstruction (SVCO) [1, 20, 30]



Patients experiencing superior vena cava obstruction and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH) [1, 4, 31]

Early Signs: Hypoactive reflexes

Early Symptoms:
- Headache
- Difficulty concentrating
- Muscle cramps and weakness
- Lethargy
- Irritability
- Ataxia
- Anorexia
- Nausea
- Vomiting
- Diarrhea
- Thirst
- Oliguria
- Abdominal cramping

Severe Hyponatremia (Serum Sodium <125mmol/L)

Signs:
- Decerebrate posturing
- Coma
- Respiratory arrest

Symptoms:
- Confusion
- Hallucinations
- Delirium
- Seizures

911 call

Patient presents in ED/inpatient/clinic

EHS Out-Of Hospital Care:

Assessment/Management
- Assessment
- Manage Airway
- IV Access
- Symptom Management

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Investigations:
- CBC
- Electrolytes
- Urea
- Creatinine
- Serum osmolality
- Urine osmolality
- Urine sodium

Diagnosis:
Hyponatremia alone is not sufficient to diagnose SIADH, essential features include:
- Decreased effective serum osmolality (<275mOsm/kg water)
- Urine osmolality >100mOsm/kg of water during hypotonicity
- Clinical euvolemia (no evidence of volume depletion or excessive volume of extracellular fluid)
- Urinary sodium >40 mmol/L with normal dietary salt intake and normal thyroid and adrenal function

When SIADH is suspected, immediately consult the local Internist on call for management and transport advice

Management may include:
- Rapid treatment is indicated for symptomatic patients with severe hyponatremia that is known to have developed acutely (within the last 48hrs)
  - 3% Hypertonic Saline IV infusion: Increase serum sodium by 1-2 mmol/L per hour (for the first 3-4 hours, then reduce correction rate to <0.5 mEq/L per hour)
  - Sodium correction should not exceed 8-10 mmol/L in 24 hrs or 18-25 mmol/L in 48 hrs*
  - A central IV line is required for infusions longer than 6h
- Patients with hyponatremia of unknown duration and non specific or absent symptoms require more cautious management
  - Modest correction of serum sodium by 0.5-1.0 mmol/L per hour via 0.9% saline infusion
  - Sodium correction should not exceed 8 mmol/L in 24 hrs and 18 mmol/L in 48 hrs
  - Consider use of salt tabs, loop diuretics

* Rapid correction of serum sodium may cause osmotic demyelination characterized by lethargy, affective changes, mutism, dysarthria, spastic quadraparesis and pseudobulbular palsy

* In all patients frequent monitoring of serum sodium (as often as every 2-3 hrs) is indicated to avoid rapid or over correction

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

Patients experiencing SIADH and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Tumor Lysis Syndrome (TLS) [1, 2, 32, 33, 34]

Presentation:
TLS should be suspected in patients with a known malignancy (hematologic or solid tumor) who present with fluid overload, decreased urine output, lethargy, muscle cramps, arrhythmias or seizure

Signs:
- Renal failure
- Seizures
- Fluid overload
- Congestive heart failure
- Arrhythmias

Symptoms:
- Lethargy
- Paresthesias
- Muscle cramps
- Tetany
- Syncope
- Nausea
- Vomiting
- Decreased urine output

Patients with obstructive uropathy secondary to hyperuricemia may also experience:
- Hematuria
- Flank/back pain
- Hypertension

Severe hypocalcemia is one of the most critical manifestations of TLS and may cause:
- Cardiovascular (ventricular arrhythmias, heart block, hypotension)
- Muscular (cramps, spasms)
- Neurological (confusion, delirium, hallucinations, seizures)

911 call

Patient presents in ED/inpatient/clinic

EHS Out-Of Hospital Care:

Assessment/Management
- Assessment
- Manage Airway
- IV Resuscitation
- Symptom Management

Transport
- Destination Protocol
- Prehospital Activation of ED System of Care

Investigations:
- CBC
- Electrolytes
- Urea
- Creatinine
- Phosphorus
- Calcium
- Albumin
- ECG
- Uric acid (if post Rasburicase, sample must be sent on ice)

Diagnosis:
Two or more of the following metabolic abnormalities with 3 days before or 7 days after the initiation of chemotherapy:
- Serum uric acid >476 µmol/L (or 25% increase from baseline)
- Serum potassium ≥ 6.0 mmol/L (or 25% increase from baseline)
- Serum phosphorus ≥ 1.45mmol/L in adults (or 25% increase from baseline)
- Secondary hypocalcemia (corrected serum calcium ≤ 1.75 mmol/L or 25% decrease from baseline)

Once lab results are available, contact Medical Oncology/Hematology on-call immediately
QEII (Halifax) 902-473-2220 CBRH (Sydney) 902-567-8000

Follow specialist's management and transport advice
Which may include:
- In the absence of acute renal dysfunction and oliguria, vigorous IV hydration (3L/m² per day) and dieuresis (≥100ml/m² per hour) should be maintained
- Diuretics (furosemide, mannitol) may be required to maintain urine output and prevent fluid overload, but should only be used if there is no evident of acute obstructive uropathy or hypovolemia

Hyperuricemia
See page 22

Hyperphosphatemia
See page 22

Hyperkalemia
See page 22

Symptomatic Hypocalcemia
See page 22

Hyperuricemia:
- Rasburicase 6mg IV infusion daily for 1-7 days
- Consider use of Allopurinol 300mg orally

Hyperphosphatemia:
- Remove phosphate from IV fluids
- Administer oral/or NG phosphate binders (e.g. aluminum hydroxide or aluminum carbonate) for up to 2 days
- Calcium infusions should be withheld
- In severe cases continuous dialysis or venovenous hemofiltration may be required

Hyperkalemia:
- Potassium levels should be immediately verified with a second sample to rule out hemolysis during phlebotomy
- Close evaluation of ECG, cardiac rhythm and electrolytes
- Oral and IV supplements should be discontinued
- In asymptomatic patients:
  - Sodium polystyrene sulfonate:
    - 15-30g orally
    - 30-50g rectally
- In symptomatic patients:
  - Regular insulin 10 units IV and 20-25g dextrose IV
  - Sodium bicarbonate 1mEq/kg IV direct (induces influx of potassium into cells)
  - Calcium gluconate 1g IV over 5 minutes may be used for life threatening arrhythmias (with continuous ECG monitoring for bradycardia)
  - Consider dialysis

Symptomatic Hypocalcemia:
- IV calcium gluconate 1-2g IV (monitor for acute obstructive uropathy)
- If phosphate is also high, renal consult should be considered

Advise the Patient's Oncologist The most responsible physician should notify the patient's Oncologist/Hematologist and treating cancer clinic, by phone, of the patients ED visit and current status.

Patients experiencing tumor lysis syndrome and their families will, undoubtedly, experience some degree of distress. Please refer to page 23.

Psychosocial Health Needs of Patients and Families Experiencing Oncologic Emergencies [35, 36, 37, 38]

The needs and concerns of adult cancer patients vary from the time of initial diagnosis through treatment and survivorship, advanced disease and death and dying. Their needs include physical, emotional, psychological, practical, informational, social, and spiritual issues, and all are important in the provision of person-centred care.

Thirty-five to 45% of cancer patients display clinically significant levels of distress at some point during their cancer experience. Family members also experience clinically significant distress, at levels equivalent to or greater than patients. Cancer-related distress is defined as "a multi-factorial unpleasant emotional experience of a psychological (cognitive, behavioral, emotional), social and / or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment. Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness, and fears to problems that can become disabling such as depression, anxiety, panic, social isolation and existential and spiritual crisis".

Distress is now recognized as the sixth Vital Sign of cancer care. In Nova Scotia, identification of patient distress through screening and management of the cancer-related distress is a standard of care.

Various points in the illness continuum, such as initial diagnosis, end of medical treatment, time of medical procedures, change in disease status, during end of life care and times of personal transition, are associated with increased distress and uncertainty for patients and families. Dealing with oncologic emergencies, that are potentially life-threatening, or potentially limiting in regard to quality of life, are especially stressful times for patients and families. The sudden onset and outcome of these emergency events can be traumatic and distressing for patients and families. Providing person-centered, culturally competent care to patients experiencing oncologic emergencies can reduce the distress experienced by patients and families.

When dealing with an oncologic emergency, patients and families will benefit from supportive communication (e.g., clear communication, provision of relevant information, active listening, empathy), supportive counselling (e.g., provision of support, minimizing symptoms, making patients and families aware of resources) and symptom management (supportive care[a]), as appropriate.

For those patients and families who experience a high level of distress and are having difficulty coping with an oncologic emergency, referral for specialized psychosocial care (psychosocial oncology[b]), is recommended. The patient/family should be referred to the most appropriate healthcare professional available in the clinic/hospital. For example, if the patient with an oncologic emergency is seen in the Emergency Department, referral may be initially to Mental Health Triage, Social Worker assigned to Emergency Department, or to the Cancer Patient Navigator for assessment and referral to available resources. If the emergency occurs while patient is hospitalized, or being followed on an outpatient basis, referral may be to the QEII Psychosocial Oncology Team, Psychiatrist, Psychologist, Social Worker, Advanced Practice Nurse, Spiritual Care, or Cancer Patient Navigator, dependent on the resources available in the district.

The cost of ambulance services is not an insured service. The cost of ambulance transport may create a financial hardship for patients/families. Patients/families may be eligible for support through the Ambulance Fee Assistance Program and should be referred to the Emergency Health Services billing office, (902) 832-8337 or toll-free 1-888-280-8884. Further information concerning ambulance fees can be accessed at *www.gov.ns.ca.*

For further information and guidance concerning the management of cancer-related distress, refer to the *CCNS* Best Practice Guideline for the Management of Cancer-Related Distress in Adults.

[a] Supportive care services are defined as addressing "a range of needs, including informational and counselling needs related to the management of symptoms and specific practical or functional issues. A variety of disciplines may be involved in provision of supportive care, such as nursing, medicine, nutrition and rehabilitation services."[37]

[b] Psychosocial oncology is defined as "a specialty in cancer care concerned with understanding and treating the social, psychological, emotional, spiritual, quality-of-life and functional (practical) aspects of cancer, from prevention through bereavement. It is a whole-person approach to cancer care that addresses a range of very human needs. Psychosocial Oncology focuses on the emotional distress aspects of cancer care and is particularly concerned with the assessment and treatment of distress...and the management of complex issues" [37]

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